

## Retinoscopy:

Retinoscopy measures refractive errors by an objective method.

### Step 1: Preparing for retinoscopy:

- Position patient at phoropter
  - The examiner and patient are eye to eye.
  - Have the patient fixate on a distant target.
- Determine your working distance. (Average working distance is about 67cm (22in))
- If more or less, calculate by using the formula:

$\text{Working Distance Lens (D)} = \frac{1}{\text{Distance from examiner's eye To the patient's eye (m)}}$ <p>Where D = diopters And m= meters</p>
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- Understand that this working distance will account for a +1.50D adjustment to determine your end result.
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**Step 2: Level the phoropter** (adjust until the leveling bubble is between the 2 central vertical lines)

**Step 3: Position the phoropter** (adjust the IPD (interpupillary distance) knob until the center the pupils in the phoropter aperture)

### Step 4: Identify the two meridians.

- Chose your retinoscope and turn it on to the appropriate brightness.
- NOTE: “intercept” refers to the light from the retinoscope; whereas “Streak” and “reflex” refer to the light from the patient’s eye
- NOTE: if the patient has refractive error, then the reflex from the patient’s eye will align along two meridians.
- Identify these two meridians:
  1. Place sleeve into diffuse light position, using the phoropter lenses (or loose lenses), sweep the streak across the pupil, note whether the streak is “with” or “against” motion.
  2. Once the intercept has been identified, rotate the sleeve 90° and the movement of that streak should be noted.
  3. Convert all streaks to “with” motion by adding minus sphere power.
  4. NOTE:
    - Speed: the reflex moves faster the closer you get to neutrality.
    - Brightness: the reflex gets brighter the closer you get to neutrality.
    - Width: The reflex gets wider the closer you get to neutrality.
  5. If the streak remains the same with rotation of the sleeve, then there is no astigmatism.
  6. If the streaks are different, then there is astigmatism present. The widest streak represents the sphere portion of the refractive error. The narrow streak represents

the cylinder portion of the refractive error, which is neutralized with plus cylinder lenses once the axis has been determined.

**Step 5: Determine the sphere power.**

- Place lenses in front of the eye until neutralization occurs starting with the least plus meridian first- that's usually the one with the faster and brighter reflex initially)

**Step 6: Set the cylinder axis.**

- Once the least plus meridian has been neutralized (Step 5), rotate the retinoscope intercept 90° and parallel to the most plus reflex. An intercept properly aligned with the most plus reflex indicates the axis of plus cylinder.

**Step 7: Determine the cylinder axis.**

- Use break, thickness, intensity/straddling, skew phenomena

**Step 8: Determine the cylinder power**

- Turn the cylinder power dial adding plus cylinder power lenses while sweep back and forth until neutralization is achieved.
- Once neutralization has been found, rotate the retinoscope sleeve to verify there is no "with" or "against" motion in any meridian.
- Side note: Recognize Spherical aberration and scissors reflex

**Step 9: Subtract your working distance from the final retinoscopy results.** (Subtract the working distance dioptric value from the sphere power of the distance prescription.)

**Step 10: Document your results**