



Schematic Eye for Retinoscopy Training

Part Number: 502200, 502300

The training eye is designed to help students acquire the skill of performing retinoscopy, and instructors a means to evaluate that skill. The back of the training eye can be adjusted from +3 to -4.5 to simulate different refractive errors. Hypermetropia (farsightedness) is created with the eye set to "+" values while myopia (nearsightedness) will result with "-" values. This range can be extended by placing a 38mm-diameter trial lens in the well in front of the eye's pupil. The power of a convex (plus power) lens adds to the amount of myopia set by the position of the back of the eye; concave (minus) lens power adds to the setting of the eye for hypermetropia. For example, if the setting of the back of the eye is -2 and a +2 diopter lens is positioned in the lens well, the resultant refractive error will be 4 diopters of myopia. A -2 diopter lens in the lens well combined with a setting of the eye of +4 will result in a refractive error of 6 diopters of hypermatropia.

Similarly, a cylinder lens can be used to simulate astigmatism. For example, against-the-rule astigmatism – greater refractive power in the horizontal than the vertical meridian of the eye – is simulated either with a convex (plus) cylinder with its axis aligned with the 90-degree mark on the front of the training eye, or a concave (minus) cylinder with the axis at the 0-degree mark.

Because the neutralizing lens power varies with the working distance, it may be helpful for students to use a string to set their distance until they become comfortable with a chosen distance. The back of the training eye is adjusted to 0 and distance and base lens chosen according to the following table:

Working distance	Lens diopter
50 cm	+ 2.00
57 cm	+ 1.75
67 cm	+ 1.50

(Selection of distance is dependent upon comfortable arm length.)

To arrive at the actual refractive correction, the power of the working lens is subtracted from the total lens power used to achieve a neutral retinoscopy reflex – absence of with or against motion. If the resultant sphere power is positive, the eye is hypermetropic; a negative power indicates myopia. For example, suppose a neutral reflex is obtained with a +3 (convex) diopter lens. If the examiner is positioned at 50 cm, subtract 2 diopters for the working distance. The result is +1, the lens power needed to correct 1 diopter of hypermetropic error. Note that this result would be obtained either with the back of the eye set at +1 with no lens in front of the pupil or the eye set at zero and a -1 (concave) lens placed in front of the pupil. Instructors may find the later arrangement convenient for creating different refractive errors with a single lens (spherical or sphero-cylindrical) to assess student skill.

