By the conclusion of the exam, the refracting person will recommend a glasses prescription (Rx) that best corrects the patient's vision.

Decoding the prescription

OD = right eye **OS** = left eye **OU** = both eyes

The prescription default is that of a distance prescription, *unless otherwise specified* (eg if it specifies Near Vision Only, then then Rx is for just reading).

Sphere: This indicates the amount of lens power, measured in diopters (D), prescribed to correct nearsightedness or farsightedness. If the number appearing under this heading has a minus sign (–), this is a myopic (nearsighted) prescription; if the number has a plus sign (+), this is a hyperopic (farsighted) prescription. The term "sphere" means that the correction for nearsightedness or farsightedness is "spherical," or equal in all meridians of the eye. "Plano" sometimes abbreviated as "pl" indicates that the value of the spherical portion of the prescription is 0.

Cylinder: This indicates the amount of lens power for astigmatism. The term "cylinder" means that this lens power added to correct astigmatism is not spherical, but instead is shaped so one meridian has no added curvature, and the meridian perpendicular to this "no added power" meridian contains the maximum power and lens curvature to correct astigmatism.

Axis: This describes the lens meridian that contains no cylinder power to correct astigmatism. The axis is defined with a number from 1 to 180. The number 90 corresponds to the vertical meridian of the eye, and the number 180 corresponds to the horizontal meridian. The axis is the lens meridian that is 90 degrees away from the meridian that contains the cylinder power.

Add: This is the added magnifying power applied to the bottom part of multifocal lenses to correct presbyopia. The number appearing in this section of the prescription is always a "plus" power, even if it is not preceded by a plus sign. Generally, it will range from +0.75 to +3.00 D and will be the same power for both eyes. ***To determine the effective reading power of a pair of glasses, you add the numeric value of the Add to the Sphere portion of the Rx***. For example:

Rx:	OD: +0.75 sph OS: -1.25 sph → OU: +1.00 Add	Effective Reading Rx:	OD: +1.75 sph OS: -0.25 sph
Rx:	OD: +2.00-0.75x165 OS: -1.00-1.25x015 OU: +2.00 Add	Effective Reading Rx: →	OD: +4.00-0.75x165 OS: +1.00-1.25x015

Searching for 2 separate pairs of glasses

If the bifocal prescription is not available in the inventory, you can search for 2 separate pairs of Rx glasses, the distance only prescription and the near only prescription. Just enter the base prescription into

the software to pull the closest matches for a single vision pair of distance Rx glasses. To determine the near only prescription, simply add the Add value to the sphere portion of the distance Rx (keeping the cylinder and axis the same), and enter that prescription into the software to pull the closest matches for a single vision pair of near Rx glasses.

Note that if the base, distance prescription is spherical and symmetric and the Add is the same in both eyes (as it usually, but not always, is), you can simply add the Add number to the spherical portion of the glasses in order to determine what the **readers** are that you can use for a Near Vision Only Rx.

Eg. If the base prescription is +2.00 sph OU, and the Add is +1.25 OU, then the reading glasses equivalent would be +2.00+1.25 = +3.25 OU. This is handy to consider if the inventory does not have a bifocal in stock but you would like to dispense a pair of ("reader") glasses for distance and a pair of ("reader") glasses for near vision. In the above example, the distance prescription would be the +2.00 sph pair, and the reading prescription would be the +3.25 sph pair. Remember that this does not work if the prescriptions for the right and left eyes are not similar, or if there is astigmatism present.

Spherical Equivalent

Ok...now what if you've entered the Rx into the system and the computer determines there is no match? You could try to find the next closest Rx by determining the spherical equivalent

The spherical equivalent is a set of two numbers, one value for each eye, that gives you an estimate of the eyes' refractive error. The Spherical Equivalent is calculated as follows:

The amount of cylinder you are trying to get rid of is divided by 2

- The cylinder power is only present in a particular direction. When attempting to combine the cylinder with the sphere, your doctor must take this into account by only taking half of the cylinder.
- Because cylinder powers only come in steps of -0.25, it is possible that when it is divided by 2, that the number does not end in a multiple of -0.25. That is where your eye doctor's professional judgement comes into play to decide which closest multiple of -0.25 will be the most appropriate.

  Eg +2.00-1.00x100 becomes +1.75-0.50x100 and is also equivalent to +1.50 sph

The axis is not involved in this calculation

- The axis is not part of the calculation for spherical equivalent at all. It either stays the same or completely disappears.

  Eg +2.00-1.00x100 becomes +1.75-0.50x100 (axis is the same even though the amount of cyl has decreased) and is also equivalent to +1.50 sph (all the astigmatism was removed and therefore there is no axis to keep track of).

The sphere and the 1/2 cylinder are combined

- The sphere and the cylinder are then added together to give you the equivalent sphere.

Remember that the spherical equivalent is not the most accurate number for most people as it does not include the astigmatism component. Also, keep in mind that the less astigmatism correction you preserve (compared the original amount that was to be prescribed), the less sharp/clear the visual result. ***It is therefore recommended that when you attempt to find the spherical equivalents of an Rx, you try to maintain as much of the original cylinder as possible.***

Examples:

Rx 1: OD: +2.75-1.00x100
OS: -1.25-0.50x080
OU: +1.00 Add

→ Spherical equivalent Rx 1: OD: +2.50-0.50x100
(cyl cut by 0.50 OU) OS: -1.50 sph
OU: +1.00 Add

→ Spherical equivalent Rx 2: OD: +2.00 sph
(cyl cut by 0.50 OD only) OS: -1.50 sph
OU: +1.00 Add

Rx 2: OD: +0.50-3.25x090
OS: -2.00-1.50x180

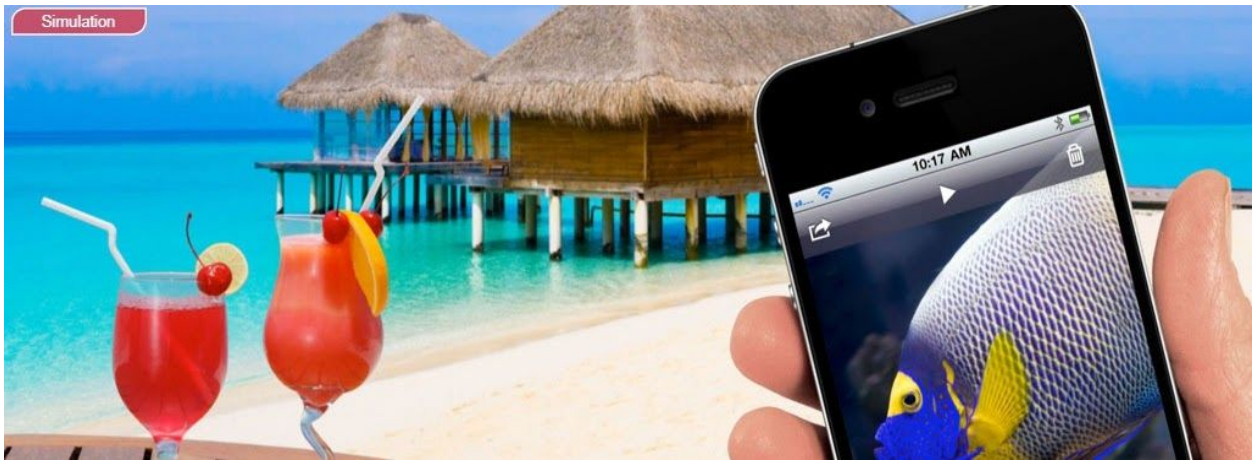
→ Spherical equivalent Rx 1: OD: +0.25-2.75x090
(cyl cut by 0.50 OU) OS: -2.25-1.00x180

→ Spherical equivalent Rx 2: OD: pl-2.25x090
(cyl cut by 1.00 OU) OS: -2.50-0.50x180

Note that you can always cut the amount of cylinder symmetrically between the right and the left eyes but it is not crucial. So in the example directly above, a 3rd spherical equivalent option could be:

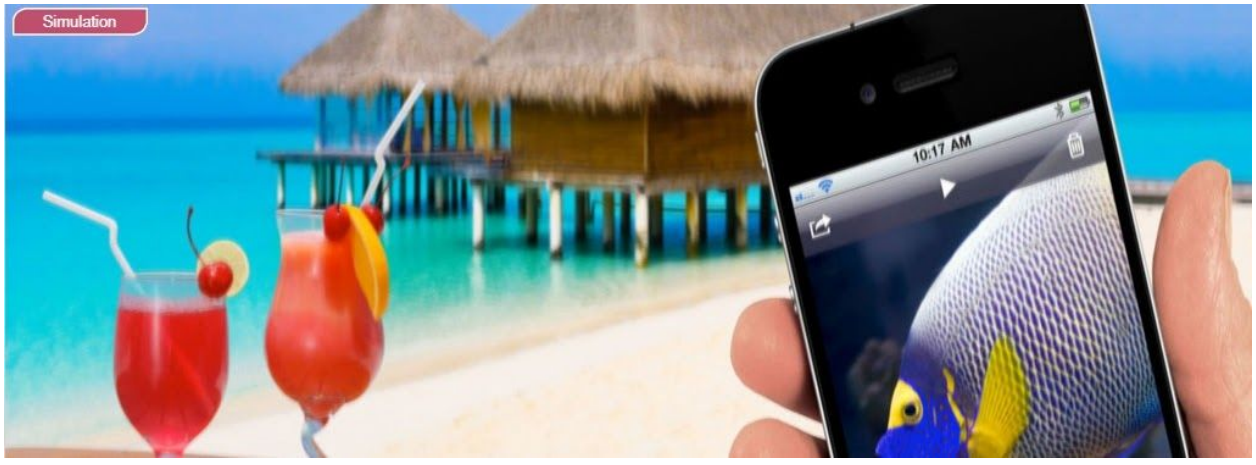
→ Spherical equivalent Rx 3: OD: +0.25-2.75x090
OS: -2.50-0.50x180

Simulation of corrected vision



Simulation of uncorrected astigmatism:

Simulation of partially corrected astigmatism:



Ah-Kine - last edit 1/18/2020