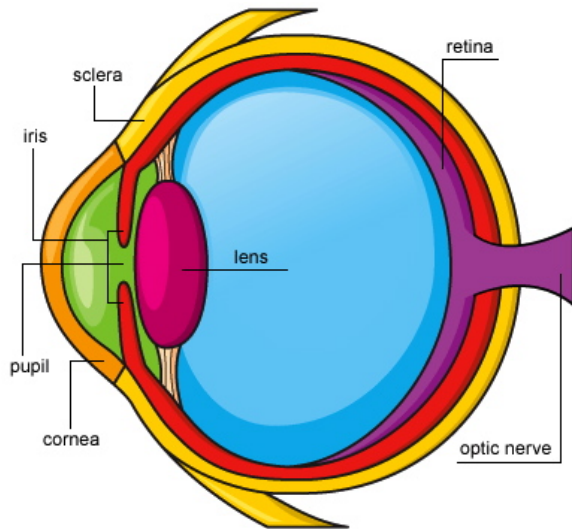


Nearsightedness, Farsightedness, Astigmatism & Presbyopia

The Eye



The cornea directs light onto the lens.

The lens in the eye focuses the light onto the retina.

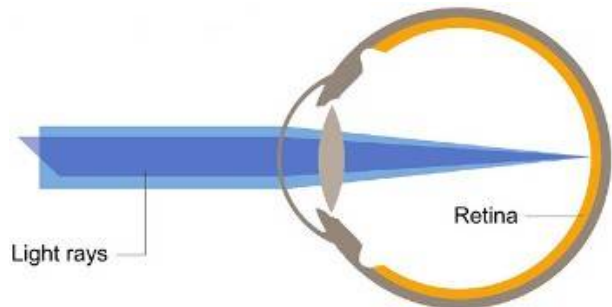
In its normal, relaxed state, the lens is focused for distance vision.

Muscles attached to the lens squeeze it to make it thicker (and more curved) to bend the light rays more when you want to focus to closer distances.

Perfect Distance Vision

In an eye with perfect distance vision, the relaxed lens will focus a distant object on the retina.

When we are young, the lens can change shape (increase curvature) to focus on objects at closer distances. The closer the object, the greater the curvature required.



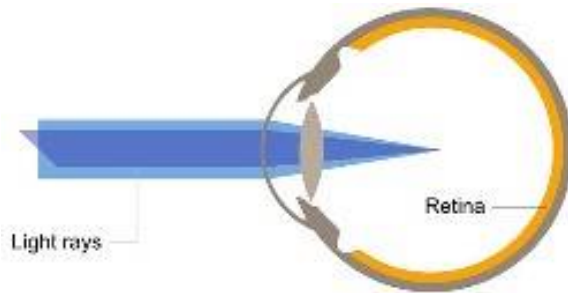
As we age, the lens becomes increasingly unable to do this. Year by year it loses more and more of the "accommodation" required to focus on near objects.

So, even the person with perfect distance vision will find him or herself increasingly unable to focus to close distances as he/she progress through their 40's and beyond. They have entered the early stages of presbyopia.

They will need corrective lenses to provide the extra curvature (ADD) that the lens in their eye is no longer providing.

And, as their presbyopia progresses, they will need increasingly stronger reading glasses — along with different glasses for different distances.

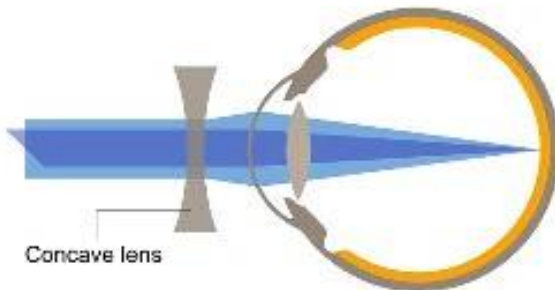
Nearsighted (Myopic)



A nearsighted eye is not so perfectly formed. The result is that even with the lens in the eye relaxed, distant objects are focused somewhere short of the retina.

A myopic person can usually focus on close objects, but distant objects are fuzzy.

Glasses with a concave lens that spreads the light out can correct this.



With the glasses, the nearsighted person can see distant objects clearly.

With distance vision corrected, the lens in a youthful myopic eye can increase curvature to focus to closer distances.

As a myopic person gets into his or her 40's and the lenses in their eyes can no longer focus to close distances, they will lose the ability to focus close with their glasses on. But, if they don't have significant astigmatism, for a while they may find that they can still read by simply taking off their glasses.

This makes perfect sense: without their glasses, the natural "distance" focus for their eyes is actually some close distance, rather than far.

But, as their presbyopia increases, they will usually find that they need assistance to focus to any distance other than this natural relaxed-lens "distance" focus.

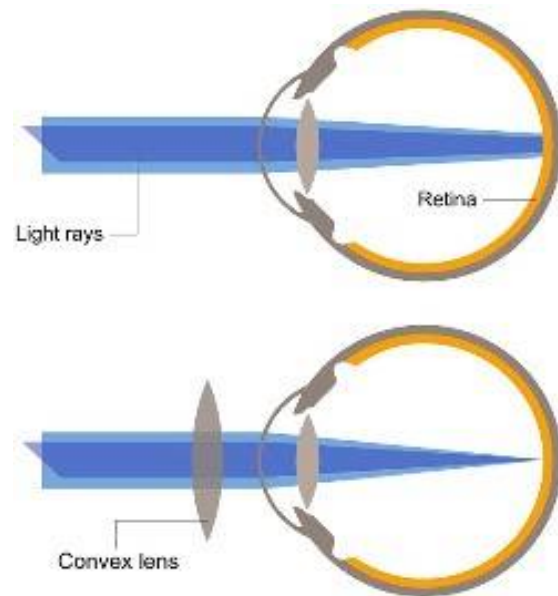
So, they, too, end up moving on to different pairs of glasses for different distances, bifocals, trifocals, progressives — or Superfocus.

Farsighted (Hyperopia)

The farsighted person has the opposite problem from the nearsighted person. Their eye is misshaped in the opposite direction. Think of their eyes as being too short.

So, the focus point for distant objects is somewhere beyond the back of their eye. When the lenses in their eyes are relaxed, distant objects will be fuzzy — and closer objects will be even fuzzier.

But, if they are mildly or moderately farsighted, for a while at least, the amazing natural accommodation of the youthful human eye will take care of them.



To focus to distance, the muscles that control the lens in the eye will cause the curvature of the lens to increase until the distant object is brought into focus.

Basically, because the eye is too short, the lens in the eye has to shorten its focus in order to bring distant objects into focus.

To focus on still closer objects, the lens curvature will increase even more — something that the lens is quite capable of doing when we are young.

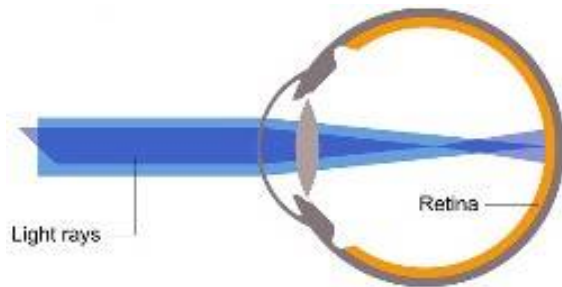
As a result, many younger mild-to-moderate farsighted people do not realize that they have less than perfect vision.

But, because they are using up some of their accommodation just to focus on distant objects, they will reach the point at which they can no longer focus on close objects at an earlier age than their perfect-vision peers.

So, farsighted people will typically have to start using reading glasses earlier, and will have to move to stronger corrections earlier.

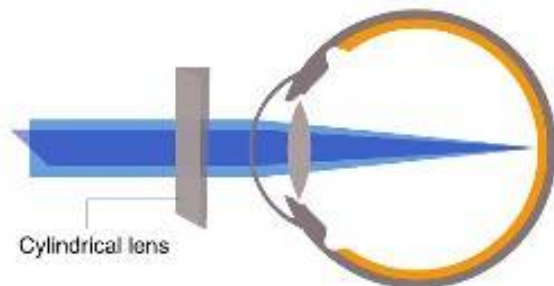
And, at some point, the lenses in their eyes will no longer be able to compensate for their farsightedness. They will need corrective lenses even to focus on distant objects.

Astigmatism



Astigmatism results when the cornea is not perfectly spherical in shape.

The result is a "lopsided", somewhat cylindrical sphere that does not focus all the light rays entering the eye onto a single point on the retina.



This means that objects at *all* distances will appear somewhat blurred.

Some people do not notice mild astigmatism. Stronger astigmatism requires eyeglasses that correct for "cylinder".

Astigmatism often can occur in conjunction with nearsightedness or farsightedness. But, even people with perfect distance vision can also have astigmatism.

Almost anyone with more than mild astigmatism will want vision correction all the time. They will typically wear glasses or contacts well before they are aware of presbyopia.

They will need both distance and reading glasses in the early stages of presbyopia, and they will need multiple glasses, bifocals, trifocals, progressives, or Superfocus as their presbyopia advances.

First distance, then ADD

Whether you are buying bifocals, trifocals, progressives or Superfocus glasses, the corrective concept is the same:

You start with a prescription to correct your distance vision. This takes care of whatever combination of astigmatism, myopia or hyperopia you may have.

Bifocals, trifocals and progressives. If you are getting bifocals, trifocals or progressives, your distance prescription is built into the distance portion of your glasses.

Then, the amount of extra curvature (ADD) you need for comfortable reading is put into the reading portion of your glasses.

If you are buying trifocals, your eye doctor will prescribe a lesser amount of ADD for the 'intermediate zone' of the glasses.

Superfocus. When you buy a pair of Superfocus glasses, your distance prescription is built into the front lenses. Focusing to any distance from far down to reading distance is done by the rear focusing lenses.

You do not have to worry about how much ADD you need. The focusing lenses cover the entire range that a presbyope will need. Simply dial in as much ADD as you need at any given time for any given task.