

Glossary

Italicized words indicate that they are represented in the glossary

Accommodation - The ability of the *crystalline lens* of the eye to change shape and focus on objects at different distances is called *accommodation*. This is the function that is lost when a patient becomes *presbyopic*.

Add Power - The *add power* is the amount of plus correction that is added to a patient's distance vision that will allow them to see well up close. Patients who are *presbyopic* will have a reading *add*.

Alternating/Translating - A true *bifocal* lens design has two separate segments; one for near, the other for distance. In order for the correct vision to be delivered to the patient, the lens must *alternate* between the two segments by *translating* or shifting on the eye. These lens designs are only available to the *presbyope* in *GP lens* materials.

Aspheric - *Aspheric* means "not spherical." *GP contact lenses* that have *aspheric* curves are not based on a circle, but instead gently flatten, more closely aligning the surface of the *cornea*. Almost all *multifocal contact lenses* use *aspheric* curves to produce multiple images that provide near, far and intermediate focal lengths. For most *aspheric* contact lens designs, the power gradually changes from distance in the center of the lens to intermediate and then near in the periphery.

Astigmatism - When light rays focus in two different planes on the *retina* rather than at a single point, the patient has *astigmatism*. When patients have *astigmatism* they will notice that vision is blurry at all distances instead of just up close or far away.

Base Curve - The *base curve* of a *GP* or soft contact lens, refers to the amount of curvature found on the back surface of the contact lens. This is the central curve and often determines how the lens fits on the *cornea*. This measurement can be written in two forms; millimeters of radius (mm) or diopters (D).

Bifocals - "Bi" means "two" and "focal" means "vision." A *bifocal* spectacle or contact lens delivers two separate areas of vision; one for distance and one for near. Traditionally, a *GP bifocal* has the distance segment in the top of the lens and the near segment in the bottom. These lenses must *alternate* or *translate* on the eye in order to allow the correct power to position in front of the *pupil*. Since these lenses provide very clear distance and near vision, they are an excellent choice for patients who need strong distance and/or near vision.

Cleaning Solution - Cleaning contact lenses of all types is an important first step in the disinfection process and helps to keep the contact lens comfortable, clear and safe to wear. A few drops of *cleaning solution* are applied to the surface of the contact lens and then gently rubbed on the surface. As with all contact lens solutions, a patient should be instructed to only use the *cleaning solution* recommended by the contact lens professional.

Concentric Lens Designs - Sometimes referred to as “annular” or “target” lenses, these *GP bifocal/multifocal lens* designs have either a distance or near portion in the center of the lens and the opposite in the periphery.

Conjunctiva - The *conjunctiva* is the clear covering found on the surface of the *sclera* and the underside of the eyelids.

Cornea - The clear, outer portion of the eye is called the *cornea*. It is through this clear tissue that light rays are bent before they are focused on the light sensitive *retina*. A contact lens rests upon a layer of tears that covers the *cornea*. The *cornea* is one of the few areas in the body that is transparent and has no blood supply of its own.

Crystalline Lens - The *crystalline lens*, along with the *cornea*, provides focusing power for the eye. Light is directed through the *pupil* to the *crystalline lens*, which is found behind the *iris*. Like the *cornea*, the *crystalline lens* has no nerve or blood supply of its own and is transparent allowing light rays to pass through to the *retina*. Another remarkable feature is that the *crystalline lens* has the ability to change shape and therefore change its power. When someone needs to view a near object, the *crystalline lens accommodates* and provides more plus power to the visual system. But, as a person matures, the muscles that hold the *crystalline lens* in place become weaker making it more difficult to provide that near vision up close. This is called *presbyopia*.

Diagnostic Fitting - When a trial or diagnostic contact lens is applied to the eye and then evaluated in the office prior to ordering a custom contact lens for the patient, this is called *diagnostic fitting*.

Diameter - The *diameter* of a contact lens is simply how wide or large the overall lens is from one side to the other. Except for some special lens designs, *GP contact lenses* are much smaller than soft contact lenses and only fit over the *cornea*. Soft contact lenses are much larger and fit onto the *sclera*.

Disinfecting/Soaking Solution - When contact lenses are not in use, they are stored in a *disinfecting/soaking solution*. This solution reduces the amount of bacteria found on the contact lens surface and conditions the surface. Fresh *disinfecting/soaking solution* should always be used. A patient should not change the *disinfecting/soaking solution* they use unless they first check with the contact lens professional.

Emmetropia - When an individual has no refractive error or correction, it is called *emmetropia*. In *emmetropia*, light rays focus directly on the *retina*.

Empirical Fitting - When a nomogram or “recipe” is followed and a contact lens is ordered for the patient based on specific measurements taken in the office it is considered *empirical fitting*.

Enzyme Cleaner - To remove stubborn protein deposits, the contact lens professional may recommend the use of an *enzyme cleaner*. How often the *enzyme cleaner* should be used is determined by the contact lens professional.

Fluorescein - To enable the contact lens professional to evaluate the fit of a *GP contact lens* and determine if there is any staining on the surface of the *cornea*, *fluorescein* dye is applied to the tear film. This bright yellow dye stains the tear film and is very easy to see through the *slit lamp* with the aid of the blue cobalt filter and an additional *Wratten filter*.

Gas Permeable or GP Contact Lenses - *GP* or *gas permeable contact lenses* are firm lenses that offer its wearers many advantages. Because *GP contact lenses* are firm, they provide excellent vision, are easy to apply and remove from the eye, are easy to handle and care for, and can last a long time. Also because they are firm, they will take a little while longer to adapt to once they are first applied to the eye. But, after a few days to a few weeks, great comfort will be achieved.

Hyperopia (Farsightedness) - When light rays focus on a point behind the *retina*, it is called *hyperopia* or *farsightedness*. A *hyperopic* or *farsighted* patient will see objects far away clearer than objects up close.

Iris - The *iris* is the colored portion of the eye and it is what gives the eye its unique coloration. But, the *iris* is much more than this and is very important in managing light. Located in front of the *crystalline lens*, the *iris* either dilates or constricts the size of the *pupil* to let in the correct amount of light. In dim light, the *iris* dilates the *pupil* to allow more light in. In bright light, the *iris* constricts the size of the *pupil* to restrict the amount of light.

Keratometer - The *keratometer* is a very important instrument found in a contact lens professional's office. This long, tubular piece of equipment is used to measure how much curvature is found on the *cornea*. This measurement is vital in helping to determine what shape and how much curvature is needed in the contact lens. Readings that are performed with the *keratometer* are referred to as K readings.

Lensometer - The *lensometer* is a piece of equipment that measures the amount of power found in spectacles or *GP contact lenses*.

Monovision - *Monovision* is a method of delivering both near and distance vision to a patient and can be used with either *GP* or soft contact lenses in almost any design. In this method, one eye is fit to see distance objects clearly and the other eye is fit to see near objects clearly. Many patients adapt very well to this type of vision correction; however, it does tend to reduce depth perception for the wearer.

Multifocals - *Presbyopic* patients may find *multifocals* a great option since they deliver more than one focal length at a time to the *retina*. Both *GP* and soft contact lenses are available in *multifocal* lens designs. A distinct advantage to these lens designs is that they provide vision at near, intermediate and distance focal lengths. They are excellent choices for patients who need to see objects at all distances, as well as those who spend a great deal of time at a computer.

Myopia (Nearsightedness) - A patient is *myopic* or *nearsighted* if the light rays come to a focus in front of the *retina*. These patients are able to see close objects more clearly than distance objects.

OD (oculus dexter) - *OD* denotes the right eye.

OS (oculus sinister) - *OS* denotes the left eye.

OU (oculi uterque) - *OU* denotes both eyes.

Phoropter - The *phoropter* is an instrument used to determine the refractive power of the eye. It is comprised of many lenses that the eye doctor offers in quick succession in order to arrive at the patient's *refraction*.

Power - The amount of correction needed to help the patient see well is the *power* of the contact lens. This number is always described in diopters (D). When the number is a minus number, it indicates a *myopic* or *nearsighted* patient. When the number representing the *power* is a plus number, it denotes a *hyperopic* or *farsighted* patient.

Presbyopia - *Presbyopia* is a normal, natural vision change that everybody experiences as they mature. The first signs are usually noticed when people are in their 40s and they have difficulty seeing near objects as clearly as they did before. Inside the eye, the *crystalline lens* changes shape to provide different optical powers, from up close to far away. As a person continues to mature, the *crystalline lens* becomes less flexible and can't change shape as easily as it did before, reducing the ability to see objects up close. The good news is that this normal aspect of maturing can easily be corrected with *bifocal* spectacles or *bifocal* and *multifocal* contact lenses!

Pupil - The *pupil* is not a something, but a nothing. It is actually the opening or window to the back of the eye. The muscles surrounding the *pupil*, found in the *iris*, control the size of the *pupil* allowing it to get larger when the light is dim and smaller when the light is bright.

Refraction - When a person has an eye examination, it is called a *refraction*. This is the term used for determining a visual correction.

Retina - In the very back of the eye is the *retina*, a light sensitive area that receives images and sends them to the brain. When light rays focus directly on the *retina*, a person is considered *emmetropic*. When light rays focus in front of the *retina* or too near the front of the eye, a person is *myopic* or *nearsighted*. Conversely, when light rays focus behind the *retina* or far away from the front of the eye, a person is *hyperopic* or *farsighted*.

Sclera - The *sclera* is the white part of the eye. It is a tough layer that helps to protect the internal structures of the eye. It is also opaque so light won't pass through it. This forces all of the light rays to come through the *pupil* before they focus on *retina*.

Simultaneous Vision - One method of delivering vision for a *presbyopic* patient is with *simultaneous* vision. In this method, found in *multifocal contact lenses*, light rays from near, intermediate and distance objects are focused on the *retina* at the same time. This is very similar to natural vision and the brain simply focuses on the images that it chooses.

Slit Lamp - Considered by many to be the most important tool in contact lens fitting, the *slit lamp* is also known as the biomicroscope. The *slit lamp* is comprised of a microscope and a light source, which allows it to provide an up close and personal look at the eyelids, tear film, eye and its structures.

Wetting Solution - A drop or two of *wetting solution* is placed in the bowl of the contact lens before it is placed on the eye. This helps the lens to adhere to the eye better, and makes the initial application more comfortable. *Wetting solution* may also be used to relieve dryness during the day while the lenses are being worn. As with all contact lens solutions, the brand of *wetting solution* should not be changed unless it is first discussed with the contact lens professional.

Wratten Filter - A *Wratten filter* is used to enhance the view of the *fluorescein* pattern of a *GP contact lens* through the *slit lamp*. This yellow filter, along with the blue cobalt filter found on the *slit lamp*, turns the tears into a bright green, making the evaluation of the fit much easier.