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20/20 – The expression for normal eyesight (6/6 in metric measurements). Expressed as a fraction, the numerator refers to the distance the patient is from the test chart – the standard distance is 20 feet (6 meters). The denominator denotes the distance at which a person with normal eyesight could read the same line. For example, if the patient's visual acuity is 20/100 then the smallest line they correctly read at 20 feet could be read by a person with normal vision at 100 feet. The Snellen chart – consisting of letters, numbers, or symbols – is used to test visual acuity or the sharpness of eyesight. A refraction test is used to determine the amount of correction needed for a prescription when treating refractive error such as astigmatism, myopia, or hyperopia.

A

"A" Box Measurement – The longest horizontal measurement of a lens; from the furthest nasal point to the furthest temporal point of a shape.

Abbe Value – A measure of the degree to which light is dispersed when entering a lens. The average range is 20 to 60. A lower Abbe value causes greater dispersion of light resulting in chromatic aberration (color fringing) when viewed through the periphery of the lens. A higher Abbe value results in less chromatic aberration.

Aberration – Any flaw introduced during the manufacturing or grinding of a spectacle lens that can result in image blur. It may be inherent in the lens design or may result from an error in processing.

Abrasive – A substance used in friction process, such as grinding or polishing.

Absorption – Occurs when light is not reflected, refracted, or transmitted. The light energy is transformed into another form, such as heat.

Absorptive Lens – The ability of a lens to intercept or block general or specific wavelengths of radiant energy. Designed to provide eye comfort against glare.

Accommodation – Automatic increase in the eye's focusing power enabling the eye to see clearly at different distances. This process is achieved by the lens of the eye changing its shape. Without the ability to accommodate, the image of an object would blur.

Accommodative Vergence – A convergence response (to turn the eyes inward) which occurs as a direct result of accommodation (eye focusing).

Acuity – The ability to respond to faint sense impressions or to distinguish light differences between stimuli.

Adaptation/Adaptive process – The maneuvers (conscious or unconscious, automatic or voluntary) by which the individual attempts to make organismic decisions as comfortable and gratifying as possible within the demands of that individual's environment.

Add Power (addition) – The difference in spherical power between the distance and near corrections found in bifocals, trifocals, and progressive addition lenses to assist the eye's accommodation at a given distance. This power is needed for near vision. Also referred to as add power or seg power.

Addition – The optical power (of a lens) required for near vision, in addition to that required for far vision.

Adjustable Nose Pads – Type of bridge that consists of small pads made of plastic or silicone to help prevent slippage and aid in evenly distributing weight of glasses on bridge of the nose.

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Against Motion – Objects sighted through convex (plus) lenses move in an opposite (against) direction as the convex lenses are moved from side to side.

Air Tempering – The strengthening of a lens as a result of cooling a heated lens.

Albinism – Pigmentation is deficient or absent. May occur in skin, hair, and eyes. Ocular albinism is a pigmentation deficiency occurring mainly in the eyes. Individuals with albinism including ocular albinism commonly have decreased visual acuity (20/70 – 20/200), strabismus, photophobia, and nystagmus. There is no known treatment. Individuals may benefit from low-vision aids. Treatment options for strabismus and nystagmus does apply to these individuals.

Alignment – The placing of the retinal quadrants of the eye so that the light stimulus is equally distributed on all four quadrants.

Amblyopia - Defective vision that cannot be corrected by eyeglasses or contact lenses. Often referred to as "lazy eye".

Ametropia – Eye disorders that prevent a clear image from forming on the retina.

Amblyopia Exanopsia (lazy eye) – Uncorrectable blurred vision due to a lack of use; the visual pathway fails to mature; an eye can become amblyopic from being crossed, having a large refractive error or having the brain suppress its vision. Corrective lenses, vision therapy, or patching therapy may be prescribed.

AMD – Age related macular degeneration, a disease that damages the macula, the central part of the retina, leading to loss of central vision and leaving only the peripheral or lateral vision intact.

Amplitude, Functional (or analytical) – The range over which clear, binocular vision can be maintained upon reading material of 20/40 angular size placed at a fixed distance (usually 13 inches).

Amplitude of Accommodation (AA) – A measurement of the eye's ability to focus clearly on objects at near distances. This eye focusing range for a child is usually about 2-3 inches. For a young adult, it is 4-6 inches. The focus range for a 45-year-old adult is about 20 inches. For an 80-year-old adult, it is 60 inches.

Analysis – A scientific procedure for dividing a complex experience into simpler constituents.

Analytical Examination – A 21-point optometric examination. Each point is a measurement of performance of a visual behavior pattern. These measurements, made through the application of prism and sphere, show the absorption of the potential of inhibition, measure the existing learned associations between patterns, and probe for the degree or organization existing in the visual pattern.

Aniseikonia – The image of an object as seen by one eye is different in size and shape from the other one.

Anisometropia – Unequal different refractive errors of the two eyes.

Annealing - The heating of a material to a sufficiently high temperature with subsequent controlled cooling to relieve any internal stress and strains.

Anomaly – Any striking deviation from typical or normal.

Anomalous Retinal Correspondence (ARC) – A type of retinal projection, occurring frequently in strabismus, in which the foveae (center of the retina that produces the sharpest eyesight) of the two eyes do not facilitate a common visual direction; the fovea of one eye has the same functional direction with an extra fovea (non-fovea) area of the other eye.

ANSI (American National Standards Institute) – Eyewear that meets this standard is considered safer than eyewear that does not.

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Anterior Segment – The space in front of the iris and behind the cornea, which includes cornea, conjunctiva, iris, lens and aqueous humor.

Antimetropia – One eye myopic (near sighted), the other hyperopic (far sighted).

Anti-Reflective Coating – A multi-layer thin coating applied to the lens surface to reduce the amount of reflection from the lens and increase light transmission.

Apex – The thin edge of a prism.

Aphakia – A condition caused by the removal of the crystalline lens most often due to cataracts.

Aqueous Humor – A clear watery liquid in the chamber of the eye that flows between the cornea and the crystalline lens and nourishes both; secreted by the ciliary processes.

AR Stack – Combined layers making up an AR coating (usually five or more). Composition of layers can vary between AR coaters.

Aspheric – A lens that is not spherical. The lens surface is marked by a variety of elliptically changing curvatures. An aspheric design allows a lens to be much flatter without compromising the optics of the lens. The benefits: flatter lenses are less noticeable in frames, and make the wearer's eyes look more natural and less magnified or minified.

Aspheric Compensation of Power – Power is compensated in each area of the lens by applying aspheric principles.

Asthenopia – Symptoms of "eye-strain" including headaches, tearing, itching, burning, and blurred vision.

Astigmatism – A condition where a misshaped cornea causes light to be focused over a range of distances rather than on a point. This can be corrected by a lens with cylinder power in a certain direction.

Asymmetrical Design – A lens design that has contour line patterns positioned differently into the nasal and temporal area to produce a right and left lens design. This is eye specific so the lens cannot be rotated to make a right or left lens.

Atoric Lens – Lens with astigmatic power in which at least one principal meridian is not spherical.

Automated Refractor – This method determines the eye's refractive error and the best corrective lenses to be prescribed by using a computerized device that varies its optical power mechanically and prints out the results.

Axis Cylinder – That principal meridian which contains only the spherical power component of a sphero-cylinder lens. Axis will intersect a spherical lens of minus power at its thinnest point and a spherical plus lens at its thickest point.

Axis Optical - (X) – An imaginary line at right angles to the surface of a lens, which passes through the optical center. The meridian of least power 90º away from the meridian of greatest power in a cylindrical lens; used in correcting astigmatism.

Axis Aligner Plier – Any device used for aligning a cylinder axis of a spectacle lens at its proper angle.

Axis Indicator of Lensometer – A device in which a scale from 0º to 180º can be aligned to give the axis of cylinder power on a spectacle lens.

B

"B" Box Measurement – In lens measurement, the longest vertical distance from the uppermost point to the lowermost point of a shape.

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Balance Lens – A lens placed in a frame which looks like the lens for the opposite eye to balance cosmetics; similar in thickness and style with no specific Rx power.

Barrel - (bbl) – (1) The component of a hinge that interlocks with the mating component of the hinge set, (2) A threaded closure device attached to a metal eyewire.

Baryta Glass – A type of glass containing lead for increasing the index together with barium to increase refractive index, while maintaining a relatively low dispersion.

Base Curve – The singular dioptric curve on the front surface of a lens. This curve is generally in place when the lens blank is manufactured and as such will control the selection of back curves necessary to produce a given prescription. This surface curve becomes the basis from which the other remaining curves are measured. When applied to lenses in general, the base curve is the group curve or the curve common to a group of lens powers.

Base Down (BD) Prism – A wedged shaped lens which is thicker at the bottom of the lens. Prisms bend light in the opposite direction from its thicker edge so base down prism turns the light upward thus causing the eye to also move upward. This prism is used to measure an eye alignment and /or treat a binocular dysfunction (eye teaming problem). Prisms are sometimes added to glasses to help improve eyesight due to a misalignment or visual field loss.

Base In (BI) Prism – A wedged shaped lens which is thicker at the nasal area of the lens. Prisms bend light in the opposite direction from its thicker edge so base in prism turns the light outward (toward the ear) thus causing the eye to also move outward. This prism is used to measure an eye alignment and /or treat a binocular dysfunction (eye teaming problem). Prisms are sometimes added to glasses to help improve eyesight due to a misalignment or visual field loss.

Base Out (BO) Prism – A wedged shape lens which is thicker on the outward edge of the lens, closest to the ear. Prisms bend light in the opposite direction from its thicker edge so base out prism turns the light inward thus causing the eye to also move inward. This prism is used to measure an eye alignment and /or treat a binocular dysfunction (eye teaming problem). Prisms are sometimes added to glasses to help improve eyesight due to a misalignment or visual field loss.

Base Up (BU) Prism – A wedged shape lens which is thicker on the upward edge of the lens. Prisms bend light in the opposite direction from its thicker edge so base up prism turns the light downward thus causing the eye to also move downward. This prism is used to measure an eye alignment and /or treat a binocular dysfunction (eye teaming problem). Prisms are sometimes added to glasses to help improve eyesight due to a misalignment or visual field loss.

Basic Formula – The subjective; it is the lens power that alters the light rays entering an eye and causes a change in the focusing mechanism in the greatest degree without causing a subjectively detected alteration in the convergence mechanism.

Batch – Generally considered to be the number of lenses that fit into an AR chamber at one time.

Baume Gauge – Used to check the specific gravity of a polishing solution.

Beam – A group of parallel rays of light.

Bevel – The shaping of the edge around the periphery of a lens necessary to hold the lens within the groove of a specific frame.

Bi-centric Grinding (Slab Off) – The process of grinding base up prism to correct vertical imbalance.

Biconcave – A lens style where both front and back surfaces are minus (concave).

Biconvex – A lens style where both the front and back surfaces are plus (convex).

Bifocal – A lens with two focal points, one for distance vision and one for near. Regular bifocals have a line between the prescriptions; blended or progressive bifocals change gradually from the near to far prescriptions with no visible line on the lens.

Binocular PD – The single measured distance from pupil center to pupil center.

Binocular (binocularity) Vision – The blending of the separate images by each eye into a single image; allows images to be seen with depth.

Birefringence – Type of lens aberration that is induced during the manufacturing process which results in chromatic aberration. A rainbow-like effect (sometimes called Newton Rings).

Bitoric Lens – A lens, both surfaces of which are ground and polished, in toric or cylindrical form.

Blank, Molded – A lens blank that is unfinished on both sides when it arrives from the lens factory.

Blank, Semi-Finished – A lens blank that is ground and polished on one side to make a prescription.

Blended Bifocals – A round style bifocal type lens designed so that there is no discernable line of demarcation between the distance portion and the reading portion. The blended area is visually non-usable.

Blended Myo-disc – Lenses have a full field curved or Plano front surface with a high minus bowl-shaped surface on the ocular side surrounded by a Plano surface called a carrier.

Blemishes – (1) Surface – present on the convex or concave surface of the lens. (2) Internal – present in the material used for substrate lens production. (3) Coating – formed or appearing during or in coating.

Blepharitis – A condition that describes an inflammation of the eyelid margins characterized by a sticky crust that forms on the eyelids.

Blinding Glare – Reflected glare caused by light reflected off smooth, shiny surfaces blocking vision.

Blind Spot – (1) A small area of the retina where the optic nerve enters the eye; occurs normally in all eyes. (2) Any gap in the visual field corresponding to an area of the retina where no visual cells are present; associated with eye disease.

Blocker – A mechanical device for affixing an ophthalmic lens blank to a plastic or metal lens carrier; used in lens edging and lens surfacing.

Blocking – Attaching lenses to a blocking body or handle in readiness for surfacing or edging.

Blue Blockers – An orange colored tint formulated to block out ultraviolet radiation and reduce blue light which may be harmful to the eye.

Blue Blur – The condition of unclear vision due to the scattered blue light in the visible spectrum.

Blurred Vision – lack of clarity or acuity.

Box Measurement – The measurement of a lens or frame by incorporating it within a square and then measuring the horizontal and vertical in millimeters.

Break Point – the point at which a person can no longer fuse (unite) two images into one. A blur point will occur before this point.

Bridge – That portion of the frame that rests upon the wearer's nose. The bridge size is the shortest horizontal distance between lenses (DBL).

C

GLOSSARY OF OPTICAL TERMS

C Measurement – The circumference of a lens.

Cable Temple – An earpiece of metal, plastic, or combination thereof, with the portion in contact with the ear consisting of wound wire, with or without a core. This portion is typically bent in the shape of a semicircle to fit securely around the ear.

Calipers – A hand-held mechanical measuring instrument in the form of pliers, having two legs or jaws that can be adjusted to determine thickness, diameter, caliber, and/or distance between surfaces. Calipers are calibrated and measure in tenths of millimeters.

Canthus – The angle formed by the juncture of the eyelids.

Carrier Lens – The major portion of a lens that has a differing power component cemented or fused to it, creating the combined lens power.

Cataract – Partial or complete opacity of the lens of the eye, causing partial or total loss of vision. Eventually, the clouded lens in the eye must be surgically removed and an intraocular lens implant inserted to take its place.

Cataract Lens – Lenses used to correct vision after cataract surgery.

Cemented Segment – An added power ophthalmic lens bound, usually by epoxy resin, to a carrier.

Center of Rotation – The imaginary point around which the eyeball pivots when moved.

Center Thickness – The front-to-back measurement of a lens at its optical or geometric center; usually expressed in 0.1 mm using a caliper.

Central Retinal Artery – The blood vessel that carries blood into the eye; supplies nutrition to the retina.

Central Retinal Vein – The blood vessel that carries blood away from the retina.

Chamber – The vacuum compartment of an AR coating machine into which the lenses are placed for AR application.

Chamfering – Use of a tool to remove all residual lens material when drilling a hole.

Chemical Hardening (tempering) – A chemical process by which the lens is strengthened by timed treatment in a hot, ion-exchange bath chemically replacing, from each surface of the lens, small ions with larger ions into a thin, toughened surface layer.

Chiasm – The lower portion of the brain at which point the two optic nerves intersect.

Choroid – The layer filled with blood vessels that nourishes the retina; part of the uvea and between the retina and the sclera.

Chromatic Aberration – When a lens causes white light to be broken into various component colors with each focus at a different distance from the lens, commonly producing color fringe around a viewed image.

Chuck – A padded metal or plastic circular piece used to support a lens during the edging process.

Ciliary Body – A structure directly behind the iris of the eye and contains the ciliary muscle.

Ciliary Muscles – A band of muscle and fibers that are attached to the lens that controls the shape of the lens and allows the lens to accommodate (change focus).

Ciliary Processes – The extensions or projections of the ciliary body that secrete aqueous humor.

CNC – Computer Numerical Control; the process of guiding the position of a machine tool such as a cutting tool of a freeform generator used computer controlled reading input of a program file.

Coating – Applied to corrective lenses after surfacing. (i.e. scratch resistance, anti-reflective, mirror, color, tint, antistatic, and anti-smudge)

Colmascope – A device which through use of polarized light, demonstrates strain existing in a piece of lens material.

Color Blindness – (color deficiency) – A condition in which a person's ability to distinguish colors and shades is less than normal. Color blind is an incorrect term because only a small number of people are completely unable to identify any colors. Color deficiencies are usually hereditary. Acquired deficiencies may indicate a health problem. A cure for color deficiency has yet to be discovered. However, people with this condition can be taught to adapt and the ability to distinguish colors can be improved with the use of colored filters.

Color-Coated Lenses – Lenses with a metallic oxide coating applied to surfaces by means of vacuum deposition. The coatings are deposited evenly across the surface regardless of prescription, so color is uniform.

Color Perception Test – A test that measures the ability to identify and distinguish colors.

Compound Lens – An ophthalmic lens containing both a spherical and cylindrical refractive power. A sphero-cylinder lens design is used to correct astigmatism.

Compensated Curve – A curve computed to attain a desired vertex power considering the thickness factor.

Computer Vision Syndrome (CVS) – The complex of eye and vision problems related to near work that are experienced during or related to computer use. Its symptoms include eyestrain, dry or burning eyes, blurred vision, headaches, double vision, distorted color vision, and neck and back aches.

Concave Lens – A spectacle lens which is thicker at the edges than in the center. A concave or "minus" lens diverges (decreases) the power of incoming light rays, and is used in the correction of myopia (nearsightedness).

Cones, Cone Cells – One type of specialized light-sensitive cells (photoreceptors) in the retina that provide sharp central vision and color vision.

Conjunctiva – The thin, moist tissue (membrane) that lines the inner surfaces of the eyelids and the outer surface of the sclera and contains many blood vessels.

Conjunctivitis – An inflammation of the conjunctiva, the transparent layer covering the inner eyelid and the white portion (sclera) of the eyeball. Conjunctivitis can be caused by a virus, bacteria, or fungus (infectious conjunctivitis, or "pink eye", may be contagious); allergies to pollen, fabrics, animals, or cosmetics (allergic conjunctivitis); or by air pollution or noxious fumes such as swimming pool chlorine (chemical conjunctivitis). Symptoms include red or watery eyes, blurred vision, inflamed inner eyelids, scratchiness in the eyes, or (with infectious conjunctivitis) a puss like or watery discharge and matted eyelids. Conjunctivitis is usually treated with antibiotic eye drops and/or ointment.

Contrast Sensitivity – The ability to perceive differences between an object and its background.

Convergence – The ability to use both eyes as a team and to be able to turn the eyes inward to maintain single vision close up.

Cord Mount - A frame style where the lenses are held in the frame by a thin plastic cord which fits a groove in a flat edge of a lens.

Cornea – The outer, transparent, dome like structure that covers the iris, pupil, and anterior chamber of the eye that transmits light to the eye, and is the major refraction element of the eye.

Corneal Abrasion – A cut or scratch on the cornea.

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Corneal Astigmatism – Defect in the curvature of the cornea whereby light rays passing through the cornea produce aberrations and are not focused on the retina.

Corneal Reflection – Method of measuring the distance from the pupil, using light reflected from the cornea to the center of the nose.

Corneal Reflex – Irritation of the cornea resulting in reflex closure of the eyelids.

Corneal Topography – Mapping or examination of the surface of the cornea.

Corrected Curve – A curve designed to partially or totally correct either or both the marginal astigmatic error and the marginal spherical error.

Corrective Lenses – Corrects eyesight disorders and is a combination of material, optical surface, and coatings.

Corridor Length – The distance between the fitting cross and the point of full add power on a progressive lens.

Corundum – Extremely hard material which emery is made.

Cover Test – A test of eyeball alignment in which each eye is covered with an occluder (eye cover) and then uncovered to observe eye movements.

Convergence – The simultaneous turning in of the eyes to keep an object in sight as it comes nearer to the eye.

Convex Lens – A spectacle lens which is thicker in the center than at the edges. A convex or "plus" lens adds optical power to incoming light rays used in the correction of hyperopia (farsightedness).

CR-39 – A thermostat resin material from which plastic lenses are cast. Also called hard resin or plastic, it was the 39th formula from Columbia Resin and is now manufactured and trademarked by PPG Industries.

Crazing – A cracked or spider web appearance on a lens surface or edge.

Cribbing – Removal of excess lens material on the edge.

Cross Curve – The strongest curve of a toric surface; lies in the meridian 90 degrees from the base curve.

Cross Eye – *See strabismus.*

Crown Glass – A spectacle lens material of 1.523 index.

CRP (Corneal Reflection Pupilometer) – A device used to measure the distance between pupils of the eyes in millimeters.

CRT (Computer Reading Trifocal) – A multifocal design that features wider intermediate areas with a 70% Add strength. They are suited for arms-length distance such as computer screen.

Crystalline Lens – A transparent biconvex lens located behind the pupil that helps to focus light on the retina.

C-size – Measurement needed for accurate lens sizing. The millimeter reading of the circumference of a given lens.

C-sizer – A mechanical device for measuring the circumference of a lens.

Curve Top – A bifocal lens with the top line of the segment slightly curved instead of straight.

Custom Coating – Prescription lenses ordered with a coating that is processed from a semi-finished blank and then coated.

Customization – The act of tailoring the optical characteristics of a progressive lens design to the individual wearer based upon information specific to that wearer.

Cylinder Axis – The meridian in which the sphere power functions alone.

Cylinder Lens – A compound lens with a toric surface with the two separate dioptric meridians 90º apart. May be recorded in (-) or (+) power. It is always followed by an axis, the direction in which there is no power of the cylinder. A prescribed amount of power that is added or subtracted to the lens sphere power to create two different powers in the principal meridians.

D

Datum Line – A line at the midpoint between the top and bottom of a lens, also referred to as the 180º line. Unless otherwise specified, optical centers are ground on this line.

"DBC" – Distance Between Centers.

"DBL" - Distance Between Lenses – The closest distance between lenses. The figure is needed to compute decentration and is measured from the closest nasal point of one lens to the closest nasal point of the other lens. This measurement may be different that the marked bridge number on the frame.

Decenter – To place out of center.

Decentration – The act of moving the optical center of a lens away from the geometric center of a shape or frame for the purpose of aligning the optical center over the pupil. The lens may also be displaced away from the wearer's line of sight for the purpose of creating prismatic effect.

Degree (º) – The 360th part of the circumference of a circle. The unit used for specifying the position of the axis of a cylinder or the location for the base of a prism.

Density – (1) The weight of a material per unit volume; (2) A measurement of the transparency of a medium, as related to light transmission.

Depth Perception – The ability to judge relative distances of objects.

Depth Perception Test – A test to measure the ability of the vision system to discern the relative distances of various objects. (Also called a "Stereopsis Test".)

Descemet's Membrane – the lining of the posterior portion of the cornea.

Deviation – (1) The change in direction of light due to the action of a prism; (2) a misalignment of one or both eyes associated with extraocular muscle imbalance.

Diabetic Retinopathy – Weakens and causes retinal changes in the small blood vessels that nourish the eye's **Diagram** – A drawing illustrating the basic frame measurements.

Diameter –The length of a straight line from one edge of a lens to the other and passing through its center.

Dielectric Mirrors – A mirror coating using between 5 & 11 layers of virtually colorless materials, precisely applied, which results in a brilliant color mirror effect. This mirror does not add density to the lens.

Diffusion – The scattering of light rays that causes a blurred image due to the imperfect refraction.

Digital Surfacing – Precise surface cutting using single point turning; cutting height is controlled at all points of the lens.

Dilation – A process by which the pupil is temporarily enlarged with special eye drops (mydriatic); allows the eyecare specialist to better view the inside and back of the eye.

Diopter (D) – A unit of measurement of the refractive power of the lens. A lens whose focal point is one meter has a power of one diopter. A lens whose focal length is one-fourth of a meter has a power of four diopters.

Diplopia – Double vision; normally the object which is being observed is single and objects in front and behind this object are seen double (diplopia).

Diffuse Glare – Reflected light that does not produce a clearly discernible image, i.e., a hazy, bright light.

Direct Field of Vision – That portion of the field which is seen by the macula.

Direct Glare – Relatively bright light that is not reflected, but emanates from a source such as the sun, oncoming automobile headlights, or other light source.

Dispensing – The art of selecting a frame, taking measurements, filling the lens prescription, and fitting a pair of glasses.

Dispersion – This occurs when white light is split into separate wave lengths and component colors.

Distance Acuity – The eye's ability to distinguish an object's shape and detail at a far distance, such as 20 feet (6 meters).

Distance Vision – Vision when looking at distance objects.

Distometer – Measures vertex distances (front of the eye to the back of the lens).

Distortion – An aberration which occurs as light rays move from the center of the lens toward the periphery. As rays approach the edge, the lens's increasing magnification causes a distorting of the image.

Divergence – The ability to use both eyes as a team and be able to turn the eyes out toward a far object.

Dominant Eye – The eye that "leads" its partner during eye movements. Humans also have a dominant hand, foot, eye, and side of brain (not necessarily all on the same side).

Double Concave Lens – A biconcave lens of special form having hollow surfaces of equal radii on both sides of the lens.

Double Convex Lens – A biconvex lens of special form having bulging surfaces of equal radii on both sides of the lens.

Drilling – The process of making a hole in a lens for mounting on a frame.

Drusen – Tiny yellow or white deposits in the retina or optic nerve head.

Dry Eye Syndrome – Itching, burning, and irritation of the eyes. Caused by lack of quality or quantity of tears to lubricate eyes. May prescribe "artificial tears" to alleviate.

Dyseidetic – Poor sight recognition of words. A form of dyslexia.

E

Earpiece – A component of a spectacle frame designed to assist its stabilization by extending over the external ear.

ECP – Abbreviation for eyecare professional.

Edge – In lens optics, the flat or angled surface which limits the refracting surfaces of a lens; the edge determines the peripheral shape of a lens.

Edge Polishing – The grinding process on edge of lenses leaving a finished clear edge rather than a white frost.

Edged Lens – A lens that has been ground to prescription and cut to the size and shape of an eyeglass frame.

Effective Diameter (ED) – Two times the longest radius of any given shape or lens. This value will give the

smallest theoretical diameter needed to cut out any given shape, assuming the center of that blank was superimposed over the geometric center of the shape. ED's are especially critical in high RXs to determine appropriate blank size and lens thickness.

Effective Power – See vertex power.

Electromagnetic Spectrum – The entire range of radiant energy, including x-ray, visible light, infrared, radiation, radio waves, etc.

Emmetropia – Theoretically normal eyesight. Refractive condition of the eye in which the rays of light come to a point of focus perfectly on the retina.

Endothelium – The inner most layer of the cornea.

Epithelium – The outer most layer of the cornea.

Equithin Prism – A procedure grinding base down prism OU (both lenses) to arrive at a thinner, more pleasing lens. Equithin can be used on any prescription but is especially effective on plus distance prescriptions, progressive lenses, and executive style multifocals.

Esophoria – The tendency of the eye to turn inward or nasally.

Esotropia – A condition of misalignment of the eyes in which one or both eyes turn inward or nasally.

Expanded Visual Fields – Wider, larger, or more precise vision in the field of view.

Extraocular Muscles – The muscles attached to the outside of the eyeball which control eye movement. Each eye has six muscles that are coordinated by the brain.

Exophoria – The tendency of the eye to turn outward.

Exotropia – Divergent strabismus. A condition of the eye turning laterally or toward the temple of one or both eyes.

Eye – The organ of vision; oculus. In humans, a spheroid body approximately one inch in diameter, occurring in pairs, positioned in sockets in the front of the skull, which focus light.

Eyeglasses – A term commonly used to describe an ophthalmic frame with lenses inserted.

Eye Hand Coordination – The ability of the eyes to guide the hands, also called visual motor integration.

Eye Lids – Movable folds of tissue that protect the eye from injury, excessive light, and distribute the tear film over the cornea and conjunctiva.

Eye Piece of Lensometer – The telescopic portion of the instrument that can be focused to the individual eye's error in order to see the adjustment of the power wheel.

Eye Size – Size of lens hole measured with a millimeter ruler on a frame from edge to edge to inside frame.

Eye Tracking – The ability of the eyes to smoothly and effortlessly follow a moving target.

Eyewire – The part of the frame that encircles the lens and holds it in place.

F

Face Form – The gentle wrap of a frame front necessary to parallel the roundness of the head.

Faceted Lens – Prescription lenses fabricated with highly polished and beveled edges.

Factory Coating – Coatings applied to large batches of lenses where the Rx is already established on the lens.

Far Point – That point upon the visual axis of the eye which is sharply imaged on the retina when the

accommodation is relaxed. The far point of a normal eye lies at infinity.

Farsightedness – A condition in which the optics of the eye are not adequate to focus on the retina of the eye. This results in blurred vision, usually in the near field of vision. It is corrected with plus power lenses. (Also called hyperopia.)

FD Trifocal – Traditional near flat top segment positioned on a full lower portion intermediate lens.

Field of View – Distance, intermediate and near viewing areas; part of the observable world that's seen at any given moment.

Filter – In optical science, a device, material, or color for restricting transmission of certain light rays.

Fine Motor Skills – The ability to coordinate hand and finger movements.

Fining – The grinding procedure yielding a satin smooth finish immediately prior to the polishing stage of lens surface.

Finished Uncut Lens – An ophthalmic lens that has been ground and polished on both sides to a specific prescription power and thickness; has been edged rendered impact resistant, if necessary, and prepared for insertion or mounting into a frame.

Fitting – The measurement and/or adjustment of frames or mounting for the specific needs of the wearer.

Fitting Cross – The location on a progressive addition lens that is normally fit in front of the pupil center; denoted by two ¼ inch lines crossed at right angles to each other on a lens layout chart. It is usually 2-4 mm above the major reference point (MRP) or optical center of the lens.

Fitting Triangle – In spectacle optics, a geometric construction from the three points where spectacles contact or put pressure against the head. The apex of the triangle is the pressure point on the crest of the nose, and the base of the triangle is the two pressure points just above the external ears, on each side of the head. When nose pads are used, there will actually be two pressure points at the apex of the triangle rather than one.

Fixation – The ability to aim the eye and hold that aim on an object, such as a word in a line of print.

Fixation Disparity (FD) – over-convergence or under-convergence, or vertical misalignment of the eyes under binocular viewing conditions small enough in magnitude so that fusion is present.

Flash Mirror – A highly reflective coating on lenses that is added for both cosmetic and performance reasons.

Flat – Zero base curvature or flat surface.

Floaters – Often called spots, these are small, semi-transparent or black specks within the eye that becomes noticeable when they fall in the line of sight. Medically, they are deposits of varying shapes and sizes present in the normally transparent vitreous. One may be born with floaters or develop them. Floaters can be an indication of serious visual problems.

Focal Length – The distance from the back vertex of a lens to its focal point.

Focal Point – When parallel rays of light are refracted by a lens they will converge or diverge from the focal point of the lens.

Focimeter – An optical instrument for determining vertex power, axis location, optical center, error-free point, and prism power at any given point on an ophthalmic lens; also called lensometer or vertometer.

Focus – A point through which rays of light converge or from which rays of light appear to diverge when entering or emerging from an optical system.

Form Constancy – The ability to recognize two objects that have the same shape but different size or position. This ability is needed to tell the difference between "b" and "d", "p" and "q", "m" and "w".

Former – Another name for lens pattern.

Formfit Bridge – The nasal bearing surface consisting of two pads and a connecting strap made of clear acrylic or silicone based material.

Fovea – A central part of the macula that provides the sharpest vision and contains the most cones.

Frame – An appliance that is designed to hold corrective lenses.

Frame PD - This is the distance between centers of the eyewires. To calculate frame PD, simply add the eye size and the bridge size. A 48x20 frame has a 68 frame PD.

Franklin Bifocal – The initial multifocal lens made by uniting the upper half of a distance power lens and the lower half of a near power lens in one frame; the two half lenses are independent of each other.

Fresnel Prism – A series of narrow prisms molded into one piece of soft plastic that has the effect of one prism. These prisms are cut and applied directly to the lens surface. They are an alternative when prism is required and a standard lens cannot be ground or when lenses will be too thick and heavy, if surfaced. In addition, they can be removed without remaking a lens when a patient's prism correction is undergoing several changes over a period of time.

Fringe – Used to denote lenses or blanks of such power, curvature or type that are not used in great quantity.

Front – A component of an ophthalmic frame typically consisting of a bridge and eyewires.

Frosted Lens – A translucent lens surface that allows light to enter the eye without crisp, sharp optics.

Fracture – A crack in an ophthalmic lens surface.

Fundus – The interior lining of the eyeball, including the retina, optic disc, and macula; portion of the inner eye that can be seen during an eye examination by looking through the pupil.

Full Field Lens – Lens in which the zone of the prescription optics extends to the edge of the lens.

G

Gauge – A measuring instrument or device calibrated to a previously established standard, or system of units.

Generating – A rapid roughing process to quickly remove material from a lens. Accomplished by cutting tools on a machine.

Generator, Free-Form – A type of computer-controlled generator with at least three axes of movement that can cut most continuous lens surface shapes to a level of precision and smoothness that requires only minimal polishing with a free-form polisher.

Generator, Traditional – A type of generator with either two or three axes of movement that can cut only basic spherical and sphero-cylindrical lens surface shapes to a minimal level of smoothness that requires additional fining with a cylinder machine.

Geometric Center – (1) The point of a lens that is midway between the top, bottom, nasal and temporal edges. This point is most always different from the ground optical center; (2) the intersection of the horizontal and vertical center lines of a box that circumscribes the lens shape.

Ghost Image – In spectacle optics, an unwanted secondary image formed by internal reflections from the rear or by reflection from the anterior surface of the cornea and a second reflection from the ocular (eye) surface of a spectacle lens.

Glass – A hard, brittle, amorphous substance made from heat-fused silicates with soda or potash, lime, metallic oxides, and similar elements of transparent quality used to manufacture an ophthalmic lens.

Glare – Relatively bright light entering the eye creating dazzle, discomfort, or visual impairment.

Glaucoma – A disease associated with increased pressure of the fluid of the eye. This disease may initially have no symptoms or pain. The condition damages the optic nerve that may lead to blindness. May be treated with medication drops and/or surgery.

Glazing – The process of edging and inserting lenses into frames or mountings.

Goggle – An ocular protective device designed to fit the orbital area of the face to shield the eyes from a variety of hazards; may be ventilated or non-ventilated.

Gradient – In tinting lenses, application of dye to a lens making the top darker and fading to clear towards the bottom of the lens.

Gradient Mirrors – Primarily used for driving or reading outdoors. This mirror helps reflect the intensity of the sun above while leaving a slight lighter area below for better visibility of the dashboard or reading material.

Grind – That process in the fabrication of a lens which gives it a specific nature.

Groove – The angle formed by the V-shape of an eyewire groove to accommodate a beveled lens.

H

Half Eye – A frame designed in such a manner that the wearer may look over the top using natural vision for distance and the correction on the bottom for close vision.

Hand Stone – A rotating wheel composed of a material than can grind a lens and not chip it using the stone and applying a lens edge to its surface.

Hard Design – A progressive lens design typically having large clear distance and reading zones. In order to create these distinct areas, all of the unwanted surface astigmatism is forced to the periphery. The result is a closely packed surface astigmatism, on either side of the corridor, between the 180º line and the reading area.

Hard Resin – A thermostat resin material from which plastic lenses are cast. Also referred to CR-39 or plastic.

Haze – In ophthalmic lenses, the presence of slight scratches, mars, coating delamination, or similar surface imperfections that interfere with light transmission by creating scatter light, surface astigmatism, on either side of the corridor, between the 180º line and the reading area.

Hard Resin – A thermostat resin material from which plastic lenses are cast. Also referred to CR-39 or plastic.

Haze – In ophthalmic lenses, the presence of slight scratches, mars, coating delamination, or similar surface imperfections that interfere with light transmission by creating scatter light.

Heat Tempering (hardening) – A heat treatment applied under pressure to the front and back surface of the lens to strengthen the lens against breakage.

High Index Lens – Lens with a refractive index greater than 1.57 made from this material with more efficient light-bending ability (high index of refraction) than hard resin or crown glass. The result is a thinner, and in most cases, a lighter lens.

Hinge – Metal fastener attached to both the endpiece of the front and the end of the temple. It has 3, 5, or 7 barrels which interlock one another.

Horizontal Meridian – the 180º meridian on a cylindrical surface.

Hue – The particular aspect of color or wavelength that enables it to be assigned a position in the visible spectrum.

Hydrophobic Coating – The top layer of modern coatings designed to repel oils and dirt and other debris on the lens surface. It provides stain resistance, cleanability, and surface durability.

Hyperopia – Farsightedness; the ability to see distant objects more clearly than close objects; may be corrected with glasses or contact lenses.

Hyperphoria – A tendency of one eye to turn above the other eye, causing eyestrain. Sometimes improved by prism ground in lenses.

Hypertropia – One eye is actually turned above the other.

Hypo-Allergenic – Property of product offering benefit in reduction of sensitivity.

Hypotropia – Downward deviation of one eye.

I

Illumination – The amount or intensity of light striking an object.

Image Jump – The apparent sudden displacement of an object that occurs when the fixation axis passes abruptly from one viewing area of a non-progressive multifocal lens to another. This may be exaggerated in high power lenses, but can be minimized by proper segment choice.

Imbalance – A state or condition when something is out of equilibrium or unequal.

Impact Resistance – The measured ability of material or lens to sustain dynamically applied external forces without breaking.

In Chamber – The action or application takes place inside the vacuum chamber during coating application process.

Index of Refraction – The degree to which a lens material refracts (bends) light. This results from the ratio of the speed of light in air to the speed of light through a lens substance; the higher the index of lens material, the quicker light rays are bent as they pass through the lens. The higher the index, the more the refractive power of the lens.

Induced Prism – The prism power created when the optical center of a lens is out of coincidence with the wearer's visual axes, or when the visual axes intersects any point on a lens with refractive power, away from the optical center.

Infinity – In optical science, a distance great enough so that rays of light from that distance may be regarded as parallel; 20 feet or 6 meters or greater.

Infrared – Electromagnetic radiation with wavelengths longer than visible light, but shorter than microwave radiation.

Inset – Generally refers to the additional decentration of a bifocal segment beyond the distance decentration.

Intermediate Seg – The middle lens in a trifocal set for a focus shorter than distance but longer than near. The usual focus is half the bifocal power, which allows the wearer to focus at arm's length.

Interpupillary Distance – The linear distance between fixation axis of the wearer's eye (centers of the pupil) with eyes focused at distance.

Intraocular Lens (IOL) – A synthetic lens implanted after cataract surgery to replace the damaged crystalline lens.

Intraocular Pressure (IOP) – Pressure of the fluid inside the eye; normal IOP varies among individuals.

Inverted Image – Visual impression of an object as formed by a lens or mirror, in which the upper and lower portions of the image appear as exchanged.

Iris – The colored round portion of the eye, situated between the cornea and the lens, and perforated by the pupil. Regulates the amount of light entering the eye by adjusting the size of the pupil.

Isochromatic – Possessing the same color throughout.

Isocoria – Equally in size of the two pupils.

Isotropic – Having equal refractive power (index of refraction) in all directions.

J

Jaeger Test – Measurement of visual acuity at the reading distance.

K

Keratitis – An inflammation of the cornea.

Keratoconus – A cone shaped protrusion and thinning of the cornea.

Keratometer – An instrument used to measure the curves of the cornea; also known as an ophthalmometer.

Keratometry – Measurement of the curvature of the anterior surface of the cornea.

Keyhole Bridge – A bridge design for a front that does not permit continuous contact between the nose and the front in the nasal crest area. Resembles a keyhole with a circular arc at the top of the opening in an antique door.

Kryptok – A fused lens with a round top bifocal 22 mm in diameter.

L

Lacrimal Gland – The small almond-shaped structure that produces tears; located just above the outer corner of the eye.

Lacrimation – Product of tears.

Lap – A tool used in the manufacture of ophthalmic products; made from cast iron, aluminum, brass, or plastic forms with power curves on the top surface; used either as grinding or polishing platforms to produce refractive or reflective surface powers on lenses.

Laser Engravings – Etchings or engravings on progressive lenses to denote the position of the fitting cross, add power, etc.

Lasik – A surgical procedure using a laser to reshape the cornea to correct refractive errors.

Layout – (1) The art or process of arranging; (2) In optical, the process of marking a lens blank for positioning in surfacing or edging equipment.

Lazy Eye – *See amblyopia.*

Legal Blindness – In the U.S., (1) visual acuity of 20/200 or worse in the better eye with corrective lenses (20/200 means that a person must be at 20 feet from an eye chart to see what a person with normal vision can see at 200 feet) or (2) visual field restricted to 20 degrees diameter or less (tunnel vision) in the better eye.

Lens – (1) The transparent, double convex (outward curve on both sides) structure of the eye suspended between the aqueous and vitreous; helps to focus light on the retina. (2) A device or means of causing the eye to make the maximum change possible in the accommodative pattern without introducing an undesirable change in the convergence pattern.

Lens (Back-Surface) – A type of free-form progressive lens that employs a factory-molded spherical surface on the front and a free-form-surfaced progressive surface that has been combined with the prescription curves on the back.

Lens (Dual-Surface) – A type of free-form progressive lens that employs a factory-molded progressive surface with a portion of the total addition power on the front and a free-form-surfaced progressive surface with the remaining addition power that has been combined with the prescription curves on the back.

Lens Bevel – The edge of a lens shaped like a "V". The bevel helps to secure the lens after it has been inserted in the frame.

Lens Clock – (base curve clock) – A small, round clock-type object with three prongs, when placed on a lens it gives the power of the lens surface. Used to determine base curves primarily. Also called a sagittal gauge.

Lens Coating – Coatings placed on a lens for either tinting or reflection purposes.

Lens Corridor – The channel of an ophthalmic progressive lens joining the distance viewing area and the total reading power area.

Lensometer– An instrument to determine the prescription of any given curve lens; also known as a focimeter or vertometer.

Lens Power – The diopter power or prescription of a lens.

Lens Stop – In a lensometer, a mechanical holder to position the lens at a fixed position, thereby providing a uniform measuring aperture.

Lenticular Aspheric – Usually plastic cataract lenses ground so that the overall weight and thickness is reduced and to eliminate lens distortions are eliminated.

Lenticular Lens – A strong power ground into a reduced area of the lens to limit thickness. The remainder of the lens is called a carrier and provides no refractive correction but gives dimension to the frame for mounting. Before high plus aspheric, these lenses had a higher usage but they are still often the only option for some aphakic patients without a lens implant.

Light – (1) The radiant energy which, after entering the eye, provides the initial stimulus for sight, (2) electromagnetic radiations visible to the human eye which gives rise to the sensation of vision by stimulating the rod and cone cells of the retina; absence of darkness.

Light Adaptation – Ability of the eye to adjust itself to an increase in the intensity of light.

Light Perception – The ability of a person to recognize the presence of a luminous source.

Limbus – Circular zone where the cornea joins the sclera (white of the eye).

Low Vision – Visual loss that cannot be corrected with eyeglasses or contact lenses and interferes with daily living activities.

M

Macula – The small, sensitive area of the central retina; the macula is responsible for good visual acuity, color vision, and central vision.

Macular Degeneration – The deterioration of the most sensitive and important region of the retina, the macula. This degeneration causes significant blurring of the central vision and can lead to blindness.

Magnification – The increase in the apparent or perceived size or subtended angle of an image in relation to actual size of object.

Major Meridians – These are the two meridians made up of the meridian of axis power and the meridian that is 90 degrees from the axis.

Major Reference Point (MRP) – The point on a lens that satisfies all optical qualities. The point on a where the complete measure of a prism required is present.

Marginal Astigmatism – When a narrow beam of parallel rays strikes a lens obliquely, rays in the two opposite meridians focus at different points. The distance between the two focus points equals the degree of astigmatism caused. This troublesome error caused lens manufacturers to develop a corrected curve lens series. The idea is if specific curvatures are controlled for specific corrections, then marginal astigmatism can be controlled.

Marking Device of Lensometer – A device mounted on a lensometer that is used with an ink pad to mark the center and the direction of the axis of the cylinder in a lens.

Marking Pins – Small metal, spring-mounted pointed pins on a lensometer, inked and used to mark the major reference point and horizontal lens bisector on an ophthalmic lens.

Mark-up – Marking of a reference line on a lens during the surfacing process to define how optical characteristics are to be ground into a lens.

Mechanical Center – the geometric center of an optical lens.

Medium – Any material through which light passes.
Melanin – A pigment that gives hair, skin and eyes its color. Nature uses melanin to protect the tissue of the eye from sunlight damage. Melanin absorbs the color in pre portion to their potential damage. It is lost with aging.

Meniscus – A lens with a crescent-shaped profile that is a combination of a concave and a convex surface.

Meridian – Ophthalmic lens power is specified according to a pattern similar to the face of a clock. The horizontal (180) meridian would be a line passing through the three and the nine. The vertical (090) meridian would be a line passing through six and twelve. The one to seven line would be the 060 meridian and the ten to four line is the 150 meridian.

Millimeter – A subunit of linear measurement; one thousandth of a meter; abbreviated mm.

Miniaturization – When an image is smaller through the lens than its original object size.

Minimum Lens Thickness – There is a limit to how thin a lens can be surfaced. This minimum thickness is determined by practicality and by established standards such as ANSI Z80-1999.

Minus – Term used to indicate the power of a concave surface of power of a lens whose concave surface is stronger than its convex. Used to correct myopia.

Mires of Lensometer –The bars and dots that go in and out of focus as you turn the power wheel of the lensometer.

Moisture Chamber – A thin plastic sheet attached to the eyewire of a frame and shaped to fit like a safety cup style side shield. Helps to create a chamber of moisture for a dry eye condition.

Monocle – A single eyeglass lens designed to be worn or hand-held in front of one eye; usually provided with an attached cord or chain.

Monocular – Pertaining to one eye only.

Monocular Vision – Vision resulting from the use of one eye only.

Mono-Design – This progressive lens type uses a single design for a given distance base curve to which all add powers are applied.

MR-10 – Unique 1.67 high index resin used in lens manufacturer's mix with best tensile strength for rimless mountings.

MRP – The MRP (major reference point) is that point in the lens that gives the prescription.

Multifocal –A lens incorporating two or more different powers (includes bifocal, trifocal, or progressive lenses).

Multi-layer AR – All modern AR coatings consist of multiple layers on each side of the lens, usually five or more.

Mydriatic – Any drug that dilates the pupil.

Myodisc – A strong minus lens that limits thickness by creating a lenticular circle around the minus power making a small 25 to 35 mm concave bowl in the center lens blank. Often an option for a very high minus patient.

Myopia – Nearsightedness; ability to see close objects more clearly than distant objects; a refractive condition in which the point of focus falls in front of the retina; may be corrected by eyeglasses or contact lenses.

N

N – The variable used to represent a material's index of refraction.

Nanometer (nm) – A unit of length equal to one-millionth of one millimeter or 10 Angstrom units; used to measure the wavelength of light.

Nasal Edge – The side of a spectacle lens closest to the nose.

Near Acuity – The eye's ability to distinguish an object's shape and details at a near distance.

Near Point of Convergence (NPC) – The closest point at which the two eyes can maintain a single unit image.

Nearsightedness– A condition in which the optics of the eye are too strong and focus in front of the retina, resulting in blurred distance vision. Also referred to as myopia. It is corrected with minus power lenses.

Near Vision– Usually from 11 inches to within arm's reach (approx. 30 inches).

Near Zone Width – The measurement of the near zone taken at a specified point below the fitting cross.

Neutralization – Utilizing a lensometer to determine the dioptric power of an ophthalmic lens.

Night Vision – The eye's ability to adapt to low light conditions. Under low light levels, the pupil enlarges and the eye uses different light receptors (rods). Different eye conditions resulting in night blindness or poor night vision include pupils that become smaller

with age, cataracts, nearsightedness, retinitis pigmentosa, or Vitamin A deficiencies.

Nodal Point – The point on the optical axis to which entering and emerging rays are directed.

Nominal Power – The nominal curve of a semi-finished lens marked in diopters by the manufacturer. The difference between marked and actual tool curve of the surface represents the manufacturer's compensation for the base curve. This compensation allows standard tooling to be utilized over a range of prescriptions with little or no further compensation by the laboratory.

Normal Vision – Vision is clear and sharp when the eye is able to focus on images correctly onto the retina.

Nyctalopia – Night blindness; impaired vision under reduced light.

O

Object Displacement – Movement of objects seen through a prism toward the apex of the prism.

Objective Refraction – Determination of the prescription utilizing the response of the patient to determine the accuracy of the prescription.

Oblique – In referring to optical axis, any axis that is not perpendicular (90) or parallel (180).

Oblique Errors – Oblique astigmatism and oblique spherical power error.

Occluder – An opaque plastic spatula device used to cover one eye during examination.

Ocular Defects – The end result of visual problems.

Occupational Segment – A segment that is prescribed and fit to answer a specific task.

O.D. – (1) An abbreviation of Doctor of optometry; (2) oculus dexter in Latin – meaning "right eye".

Off Center (Marginal) Astigmatism – Blurred vision due to power error and induced cylinder in the periphery, corrected by introducing asphericity into lens design.

Oleophobic Coating – A chemical composition top coat consisting of hydrophobic chemicals and oleophobic chemicals to repel dirt, dust, skin oils, make up for effortless cleaning and smudge resistance.

Opaque – Impenetrable by light, does not refract light.

Ophthalmoscopy – The doctor examines the inside of the eyes with an illuminates and magnifies the interior of the eye.

Ophthalmoscope – An instrument containing a perforated mirror and lenses to examine the interior of the eye.

Ophthalmologist – A medical doctor (M.D.) who is an eye specialist that can diagnose and treat eye diseases, perform eye surgery, and prescribe prescriptions and medications.

Optical Correction – Combination of curvatures of the front and rear surface of the lens, measured in diopters.

Optical Axis – An imaginary line at right angles to the surfaces of a lens and passing through its optical center.
Optical Center – The point on an optical lens where the light passes directly through without bending. The thickest point of a plus lens and the thinnest point of a minus lens.

Optical Cross – A diagram consisting of two straight lines crossing each other at right angles orientated to represent the principal refractive meridians of an ophthalmic prescription lens; used to chart the axis and refractive powers in the principal meridians.

Optician – A person trained in the dispensing and fitting of prescription eyewear and/or contact lenses.

Optical Axis – The line that passes through the center curvature of optical surfaces.

Optical Center – The point on a lens through which light can pass without being deviated.

Optimization – A method of manipulating a given progressive lens using complex mathematical algorithms in order to preserve the desired optical characteristics of the "ideal" or "target" lens design in the final lens.

Optometric Assistant – Primarily involved in front-office procedures, optical dispensing and contact lens patient education.

Optometric Technician – Technicians work directly with optometrists in the areas of patient examination and treatment including contact lenses, low vision, vision therapy, and optical dispensing and office management.

Optometrist (O.D.) – A doctor of optometry who specializes in vision examinations and treatment, prescribes spectacle and contact lenses, and also diagnoses and treats some eye diseases.

Orthokeratology – The practice of correcting or reducing prescription needs surgically altering the shape of the cornea.

Orthophoria – Balance of the eye muscles.

Orthoptics – The science of correcting defects in binocular vision.

O.S. – Oculus sinister in Latin – meaning "left eye".

O.U. – Oculus uterque in Latin – meaning "both eyes".

Over-Refraction – A determination of additional refractive power needed over a pair of spectacles or contact lenses to correct a visual error.

Oversize Blank – Larger lens blanks that are necessary in order to align the optical center of the lens with the eye P.D. as measured on the frame.

P

Pantoscopic Tilt Angle – Angle of a spectacle frame tilted towards the cheek and away from the eyebrows. Correct pantoscopic tilt allows for better vision through the lens and a more pleasing cosmetic alignment.

Parallax – The relative motion on one object with respect to another as the position of the observer's eye is moved from one position to another, or when the object is viewed alternately with one eye and then the other.

Paraoptometric – Works under the direct supervision of a licensed doctor, collects patient data, administers routine technical tests of the patient's visual capabilities and assists in office management.

Pathology – Structural and functional deviations from normal that characterize a specific disease.

P.D. – The distance from the center of one pupil to the other measured in millimeters. It varies depending on whether the person is looking at distance or converging to look at a near object.

P.D. Ruler – A ruler having a scale both in millimeters and inches. Used to measure the distance between two eyes or to take measurements off a frame.

Peripheral Vision – Side vision; ability to see objects and movement outside of the direct line of vision.

Periscopic Lens – A spherical lens with a 1.25 base curve.

Phoria – It informs as to how much accommodation may be changed with a lens, without causing an overt change in convergence.

Phoropter – An instrument of determining the refractive state of the eye.

Photochromic Lens – A lens having the capability to automatically darken when exposed to ultraviolet light.

Photophobia – Hyper sensitivity to light.

Pin Bevel – Use of a ceramic or diamond wheel to remove all sharp angles and chips from a lens edge.

Pinguecula – A small, yellowish elevation of ocular tissue near the cornea that occurs especially in people of advanced age.

Pinhole – A tiny opening or aperture, often used to estimate any potential improvement in visual acuity that might be achieved by refractive correction or other optical assistance.

Plano Lens – Plain lens material blank with no prescription corrective power. Also, Plano can refer to the curvature of the lens indicating a flat base curve surface.

Plastic Lenses – Most widely used material for eyeglass lenses lighter weight than glass.

Plus Lens – Indicates the power of a convex surface or power of a lens whose convex surface is stronger than its concave surface.

Points File – A computer program file that contains height measurements for points across a lens surface which are used for guiding the position of the cutting tool during computer-controlled (CNC) cutting of the surface.

Polariscope – An instrument used to detect stress points on a lens.

Polarization – When light penetrates certain crystals the emergent light is different than the entrance light. The emergent light emitted by the crystal vibrates in only one direction.

Polarized – A lens design to reduce reflective glare; i.e.: light reflected off the water.

Polycarbonate – A thermoplastic material formed into lenses by heat and pressure. The lenses are at least 20% thinner and lighter than comparable plastic lenses and 10 times more impact resistant.

Polished Edges – A lens bevel polished by a buffing wheel to make the edge of the lens crystal clear.

Polishing – A friction process which puts a lightly finished surface on a lens.

Polycarbonate 1.586 – A thermoplastic lens material with 10 times more impact resistance, lightness, and thinness. All are scratch resisted coated and have UV protection inherent in the lens material.

Position of Wear – The position of the fitted spectacle lens as worn by the actual wearer, including the vertex distance, pantoscopic tilt, and facial wrap of the lens.

Positive Accommodation – The adjustment of the crystalline lens from far to near regard; occurs by contracting of the ciliary muscles and increasing the curvature of the crystalline lens.

Posterior Chamber – The space between the back of the iris and the front face of the vitreous; filled with aqueous fluid.

Power – The property of a lens to bring light rays to a focus.

Power Error – The change in the power of a lens as the eye looks through various points of the lens.

Power wheel of Lensometer – The large focusing wheel that focuses the power of the sphere and the cylinder of the lens.

Prentice's Rule – The amount of prism at any point in a lens is equal to the distance in centimeters from the optical center of the lens times the power of the lens in diopters. The base of the prism will be toward the optical center for plus powered lenses and away from the optical center in minus powers (Example: 10

millimeters (1 cm) from the center of a +2.00 lens the amount of prism is 1x2.00 or 2 prism diopters) with the base toward the optical center of the lens. For cylinder lenses, the power used in calculation is the power in the meridian that passes through the point being considered.

Presbyopia – A condition resulting in the loss of the eye's ability to focus on near objects. A natural aging occurrence beginning primarily in people over 40. Age-related vision defect requiring some type of reading correction.

Prescribed Prism – A desired and ordered component of an ophthalmic lens producing specified displacement by refractive elements of the lens.

Prescription – The formula for the lenses required by a patient to compensate for a refractive error. Prescriptions are written in units called diopters. Usually written as Rx.

Prism (△) – A wedged-shaped piece of lens material, using a symbol △, that bends light, but does not refract light, in the direction of its base. Prism grinding is incorporated into spectacle lenses to help relieve eyestrain caused by weak eye muscles and/or to make the optical and mechanical centers coincide.

Prismatic Effect by Lens – When light goes through a wedge shaped lens which is called a prism, it bends. Light is also bent when it does not go through the center of a lens. It commonly occurs when the pupillary distance (PD) is not measured or made correctly.

Prismatic Imbalance – The difference in prism power in a pair of ophthalmic lenses at corresponding specified reference points.

Prism Diopter – Unit of measure indicating deflection of light rays. One prism diopter deflects rays of one centimeter at a distance of one meter. Prism power can be calculated by using Prentice's Rule – P=L x D, in which, P = prism power; L = lens power; and D = decentration (in centimeters).

Prism Segment – A straight-top glass bifocal lens with the "base in" prism ground in the segment portion only.

Prism Thinning (Equi-thin)– The reduction of inherent thickness in the upper portion of certain type of multifocal lenses by grinding equal base-down prism in each lens of a pair; the lower portions in certain type lenses tend to be thinner than the upper portions. Thickness and weight are reduced due this procedure causing a more pleasing pair of spectacles.

Progressive Channel – The aspheric corridor of a progressive lens that makes up the intermediate and near vision zones.

Progressive Lens – Designed to provide clear and continuous vision from distance to mid-range to nearby a contoured front surface curve. Progressive lenses have no visible segment lines and are designed to eliminate image-jump in vision.

Pseudophakia – The condition of an eye containing a surgically implanted artificial lens.

Ptosis – Droopy upper eyelid, causing the eye to remain partially closed.

Ptosis Crutch – A metal wire attachment mounted on the frame front.

Puck – A semi-finished lens blank with a factory-molded spherical front surface used for producing back-side progressives using freeform surfacing.

Pupil – Black, circular "hole" in the iris that regulates the amount of light entering the eye. Often compared with the shutter of a camera. The pupil appears black and the contents beyond it dark because the absence of light in the eye, similar to the way a dark room looks when viewed from a lighted one. By using an instrument called an "ophthalmoscope", eye care

practitioners are able to pierce the darkness and examine the inside of the eye.

Pupillary distance (PD) – The distance from the center of one pupil to the center of the other pupil. Used for proper positioning of eyeglass lenses in front of the eye. This measurement can be taken for distance viewing (for PD) or near viewing (near PD).

Pupillary Reflex – The automatic contraction or enlargement of the pupil when confronted with the presence or absence of light, accommodations, or emotional change.

Pupilometer – An optical device for measuring the diameter, width, or area of the pupil of the eye.

Q

Quality of Vision – Refers to the light-dark adaptation of the eye.

Quantity of Vision – The eye's ability to adjust to environmental and focal differences, which relates to blurred vision.

R

Radius – Half the diameter of a circle. The curvature of a surface may be expressed in terms of its radius, or its radius of curvature.

Radius of Curvature – A straight line measured from the center of a circle to its circumference, usually used to express the curvature of a spectacle or contact lens in millimeters, or to compute the sagittal value and dioptric power of a corneal surface.

Range of Accommodation – The linear distance from the farthest point of clear vision to the nearest point of focus or clear vision attainable by the human eye; usually expressed in centimeters or inches from far point to near point.

Ray – In ordinary usage an exceedingly narrow beam of light such as is supposed to be obtained when sunlight is admitted in to a dark room through a pinhole opening in a shutter.

Reading Field – The area in which clear reading vision is attained at a specified distance through a multifocal segment, or near-use ophthalmic lens.

Reading Glasses – Used primarily for near vision tasks. These lenses provide wearer with the proper amount of magnification for up-close tasks such as reading.

Reference Markings – Location points, inked or etched on the surface of an ophthalmic lens, provided by designers and manufacturers to establish the proper rotational alignment of a lens blank.

Reflected Glare – Relatively bright light that does not enter the eye directly from the light source, but after it has been deflected by a surface which the direct light has illuminated. It can be either diffuse or specular.

Reflection – The bouncing off of light which falls upon a surface.

Refracted Index – Characterizes the way a transparent optical material bends or refracts light.

Refraction – A test to determine the best prescription to correct a refractive error (myopia, hyperopia, astigmatism).

Refractionist – One skilled in determining the refractive state of the eyes, the state of binocularity, and the proper corrective lenses.

Refractive Error – A defect in the eye that prevents light rays from being brought to a single focus exactly on the retina.

Refractive Index – A ratio between the velocity of light in air and that of light through a particular substance. The index of air is 1.00 and indices are referred to the index of air, i.e. the index of water being 1.33 means that the speed of light in air is 1.33 times greater as the speed of light in water.

Refractive Power – A lens' ability to bend parallel light rays into focus, as measured by power diopters.

Reticule – Circular marks that go in and out of focus as you turn the ocular (eyepiece) of the lensometer.

Retina – Ultra-sensitive membrane lining the inside of the back of the eye. It is here that objects are focused. Their images are then transmitted via the optic nerve to the vision centers in the brain where they are interpreted.

Retinal Detachment – Starts as a tear in the retina, frequently related to age but sometimes can be a result from a severe blow to the eye. When a hole appears in the retinal wall, vitreous fluid seeps behind the retina contributing to the detachment.

Retinal Pigment Epithelium – The pigment cell layer that nourishes the retinal cells; located just outside the retina and attached to the choroid.

Retinitis Pigmentosa – A hereditary disorder in which the pigmented layer of the retina begins to break down, resulting in tunnel vision and difficulty seeing in dim light. Eventually central vision diminishes.

Retinoscope – An instrument for evaluating refractive errors of the eye by projection of a beam of light into the eye and observation of the movement of the illuminated area of the retina surface and of the refraction by the eye of the emergent rays.

Retroscopic Tilt – Angle or pitch of a spectacle frame away from the cheeks.

Reversed Image – Visual impression of an object as formed by a lens or mirror in which the right and left portions of the image appear as exchanged.

Reverse Slab-off - A slab-off molded into the front surface of a plastic lens to better control accuracy of the slab-off. Reverse slab-offs are used on the eye with the most plus or least minus prescription.

Rod, Rod Cells – One type of specialized light-sensitive cells (photoreceptors) in the retina that provide side vision and the ability to see objects in dim light (night vision).

S

Saccades – Abrupt voluntary shift in fixation from one point to another. When children read, this occurs as their eyes jump from word to word.

Safety Glasses – A pair of ophthalmic lenses special construction and mounted to protect the eye from injury by impact, heat, excessive irradiation, or liquid chemicals; meeting the A.N.S.I. Z87 standards.

Saggital Gauge – Instrument to measure approximate base curve of the lens. Also known as lens clock.

Saggital Depth – The theoretical thickest point of a lens. Edge thickness in a minus with a zero center thickness and center thickness of a plus lens with a zero edge.

Schlemm's Canal – The passageway for the aqueous fluid to leave the eye.

Sclera – Opaque, white outer layer of the eye connected to the cornea at the limbus. It protects the entire eyeball.

Scotoma – A blind area within the visual field.

Scratch Resistant Coating – A clear hard coating applied to the front and back of a lens to reduce scratching of the lens surface. Does not make the lens scratch proof.

Segment – Usually referred to as the "seg". It is the portion of a multifocal that is used for close tasks, such as reading. It is usually plus power.

Segment Drop – The manufacturer's specification for the vertical distance from the horizontal lens blank bisector to the horizontal tangent at the top of the segment on a semi-finished multifocal.

Segment Gauge – A mechanical measuring device which may be inserted into an unglazed spectacle rim to determine height of bifocal or trifocal add in millimeters.

Segment Height - Measurement vertically from the lowest point on the lens to the top of the segment. Traditionally bifocals and trifocals are measured just below lower lid to lower pupil. Progressive seg heights are taken from the vertical center of pupil. Seg heights can vary depending on where wearer's prefer and whether the segment is being placed for task-specific purposes.

Segment Width – The lateral measurement of a multifocal segment at its greatest width.

Semi-Finished Blank – A lens blank in which the front surface is a factory base curve finished and the back surface is to have a power ground (cut) on it.

Sepsis – Presence of pathogenic organisms and toxins in the blood or tissue.

Shield – A double rivet with an ornamental head joining both rivets, normally used to attach hinges or other components to a frame.

Single Vision – A lens having one optical center. A single vision lens may contain up to two refractive powers to create correction for astigmatism (compound lens), but will only contain one optical center.

Slab-Off – Surfacing method of grinding prism to a bicentric lens to reduce vertical imbalance at near. Regular slab-offs are prescribed for the lens with the most minus or least plus.

Slit Lamp – An instrument (combination of light and microscope) which produces a slender beam of light for illuminating and viewing the anterior of the eye under magnification.

Slumping – The process of heating a glass bland over a "former" made from a refractory material (such as ceramic) until the glass blank replicates the shape of the former. This process is often used to produce progressive lens molds.

Smart Seg – A plastic flat-top bifocal with the top portion of the bifocal segment having a progressive lens design.

Snellen Chart – A chart used for testing central visual acuity. It consists of lines of letters, numbers, or images in graded sized drawn to Snellen measurements.

Soft Design – A progressive lens design with a soft blending of surface astigmatism resulting in adequate distance and reading areas done by gradually spreading the unwanted surface astigmatism over a greater portion of the lens.

Spatial Relation – The ability to judge the relative position of one object to another and the internal awareness of the two sides of the body. These skills allow the individual to develop the concepts of left, right, front, back, up, and down. This ability is needed in reading and math.

Specific Gravity – This measurement of weight is expressed in grams per cubic centimeter. A lower specific gravity means a lighter weight lens.

Spectacle Blur – A transient impairment of visual acuity on changing from contact lenses to spectacle correction usually due to induced epithelial edema lasting from a few minutes to a few hours.

Spectrum – The result of the separation of white light into its component light waves.

Spherical Aberration – An aberration in a lens which causes rays incident at various distances from its optical center to focus at different distances from the lens.

Spherical Lens (or sphere) – A segment of a sphere, refracting rays of light equally in all meridians. A lens having the same radius of curvature in every meridian.

Squint – To be unable to direct both eyes simultaneously toward a point.

Stereopsis – Depth perception.

Stock Lens – An unedged ophthalmic lens with both surfaces finished to specific vertex power(s) supplied from the manufacturer.

Strabismus – A condition where the two eyes are not properly aligned with each other. One eye may look directly forward while the other is turned away. Most common in children. Correction may be eyeglasses, vision therapy or surgery.

Stria – A streak in a lens caused by imperfect materials and resulting in a variation of refractive index.

Stroma – The middle and thickest layer of the cornea.

Stye – An inflammation of a gland near the edge of the eye lids.

Subconjunctival Hemorrhage – Bleeding between the conjunctiva and sclera which often looks alarming, usually poses no threat to the eye or vision.

Subjective Examination – Eye test using patient's responses to help determine the prescription for glasses or contact lenses.

Surfacing (Traditional) – Accomplished by taking a lens, known as a blank, and grinding away portions of its back surface in such a way that it will contain the wearer's unique prescription.

Surfacing (Digital) – See Freeform Surfacing.

Surfacing (Direct) – See Freeform Surfacing.

Surfacing (Freeform) – The process of using a "freeform" generator and polisher to cut and polish lens surfaces of virtually unlimited complexity.

Symmetrical Design – A design that has similar contour line patterns in the nasal and temporal areas of each lens. The uniform design is decentered and rotated accordingly to produce a right and left lens.

T

Telescopic Lens – A compound lens system, with plus objective and minus ocular components for magnification or image size; a low vision aid.

Tennon's Capsule – Membranous tissue that envelops the whole eyeball except the cornea.

Thermal Cure Scratch Coating – Employs ovens in which lenses are heated and gradually brought to room temperature over a specific period of time. This may be accomplished via conduction, convection, radiation, or a combination. Produces a tightly bonded coating but

requires a lengthy cure cycle. Best suited for large batches of lenses.

Thickness Caliper – A tool used for measuring thickness. Calipers were formerly often calibrated in "points" but are now calibrated in millimeters.

Thin Film Coating – Generally refers to the ultra-thin AR coating produced in a vacuum chamber.

Tint – A lens of a specific color and hue for therapeutic and/or cosmetic effect.

Tint Density – Tints may be a variety of different hues with the same coloration density determines how much opacity of color is present.

Tinting – Tinting a lens is accomplished by immersing it in a dye bath and either manipulating it or monitoring it until it has reached the desired density or coverage pattern.

Tolerance – A permissible allowance for variation from standard in a prescribed parameter.

Tonometry – The standard to determine the fluid pressure inside the eye (intraocular pressure).

Toric, Toric Lens – A toric surface is ground with two different curves at right angles to each other with the weaker of the two curves located on the cylinder's axis. A lens containing cylindrical (or out-of-round) surface. Toric lenses are used to correct astigmatism.

Total Inset – The lateral distance separating a vertical line drawn through the geometrical center of the distance portion of a multifocal and vertical line passing through the geometrical center of the segment.

Trabecular Meshwork – The spongy, mesh tissue near the front of the eye that allows the aqueous fluid (humor) to flow to Schlemm's canal then out of the eye through ocular veins.

Translucent – (1) Pertaining to a medium which transmits light diffusely, so that objects viewed through it are not clearly distinguished. (2) Transmitting light but causing sufficient diffusion to eliminate perception of distinct images.

Transmittance – The ratio of emerging radiant energy, intensity transmitted through a medium, to the incident radiant energy.

Transparent – Capable of transmitting light so that objects or images can be seen as if there were no intervening material.

Transposition – The process of changing mathematical prescription of a lens from minus cylinder to plus cylinder and vice versa without affecting the lens' power.

Trial Frame – An adjustable spectacle-like device containing cells used to hold multiple trial lenses during subjective refraction.

Trial Lens – (1) An individual spherical, cylindrical, or prism lens as a set or case and placed in a trial frame for the wearer to try different prescription options.

Tunnel Vision – A constriction of the visual field that is commonly caused by chronic glaucoma, retinal degeneration, a tumor, or brain disorder that interferes with the fibers that connect the optic nerve to the brain.

20/20 Acuity – The expression for normal eyesight. The numerator (1st number) refers to the distance you were from the test chart, which is usually 20 feet (6 meters). The denominator (2nd number) denotes the distance at which a person with normal eyesight could read the line with the smallest letters that you could correctly read. If your acuity is 20/ 100 that means that the line read at 20 feet could be read by a person with normal vision at 100 feet.

U

Ultrasonic Cleaning – A method of vibrating at frequency high enough that the friction between parts is cleaned by a solution in the ultrasonic cleaning unit.

Ultraviolet – The part of the electromagnetic spectrum that falls just below visible violet.

Ultraviolet (UV) Coating – A coating that blocks out UV radiation up to 380+ nanometers.

Ultraviolet Radiation – Sunlight rays or short wave radiation from sources such as welding, lasers, or tanning lamps. UV light can damage the eyes and lead to snow blindness, cataracts and degenerative diseases of the eye.

Ultraviolet Rays – Usually referred to as "UV". Invisible rays given off by radiant energy (sun's rays). Over exposure to UV results in eye damage.

Uncuts – Lenses that have prescription ground on the surface but are not edged and beveled to a shape or frame.

Uniform Density Lens – A lens with luminous transmittance which does not vary significantly over the entire area of the lens.

Unilateral – Referring to one side of the head, face or body.

Unwanted Prism – Prismatic effect induced by improperly centered lenses. Any amount of prism that exists at the MRP other than that prescribed.

Uvea, Uveal Tract – The middle coat of the eyeball, consisting of the choroids in the back of the eye and the ciliary body and iris in the front of the eye.

V

Velocity – The rate of change of position in relation to time.

Vergence – The ability of the eyes to rotate toward or away from each other to remain focused on an object as it approaches or moves away.

Verification of Power – Lens measurement and inspection to determine the prescription power.

Vertex Distance – Distance from the cornea (front surface of the eye) to the back surface of a wearer's eyeglass lens.

Vertex Imbalance – The difference in vertical prism power at the reading level in a pair of lenses.

Vertex Power – The total power of a lens expressed in dioptric value in all meridians.

Vertical Centration (VC) – The exact spot where, when viewing straight ahead, the wearer's pupil looks out of the lens when the frame is properly adjusted to the face.

Vertical Imbalance – A generic description for unequal vertical position of one eye in reference to the other.

Vertical Meridian – The 90-degree meridian in a cylindrical surface.

Visible Light – The part of the electromagnetic spectrum that is visible to the eye.

Vision – The ability to take in information through our eyes and process the information so that is has meaning.

Visual Acuity – The ability to distinguish details and shapes of objects; also called central vision.

Visual Axis – The main line of sight which extends from the fovea to the object of regard.

Visual Discrimination – The ability to discriminate between visible likeness and differences in size, shape, pattern, form, position, and color. Such as the ability to distinguish between similar words like "ran" and "run".

Visual Field – Area of vision the eye can see while its attention is directed straight ahead, including peripheral vision.

Visual Pathway – Route of the nerve impulses from the retina along the optic nerve, and optic nerve radiations to the brain's sensory cortex that is located at the base of the skull.

Visual Skills Tests – Performance tests obtaining meaning of the visual environment. They may uncover impairments.

Visual Spectrum – Range of light from 380nm to 800nm.

Visual Therapy – A vision care specialty where techniques are prescribed for developing vision skills such as focusing, eye movement, two-eye coordination, visual perception, and eye-hand-body integration.

Vitreous – Transparent colorless mass of soft gelatinous material filling the eyeball behind the lens.

Vitreous Humor – The jelly-like, colorless mass of gel that lies behind the lens and in front of the retina.

Vacuum Coating - Lenses coated with metallic alloys to create color, mirror effects or anti-reflective abilities.

W

Wafer – A very thin lens which is cemented to a distance lens to form a bifocal on a single vision lens.

Wave – A ripple-like irregularity in a lens surface.

Wavelength – The linear distance occupied by one complete cycle of vibration of an energy form from any given point to the next point characterized by the same phase.

"With Motion" – Objects sighted through a concave (minus) lens move in the same direction as a concave lens when it is moved from side to side.

Wrap Frame – A type of eyeglass frame, often sports or sun wear, which curves closely around the face and temple area.

X

"X"-(axis) – A symbol used for the imaginary line connecting the geometric centers of a pair of lenses. The 180º line.

X-Ray Lenses – Occupational glass lenses used to provide some degree of protection from x-rays. These lenses cannot be hardened.

Y

"Y"-axis –A symbol used for imaginary line perpendicular to the X-axis. The 90º line.

Yellow Tint – This tint absorbs practically all UV light and blue light and offers increased haze penetration, making objects stand out clearly on hazy and overcast days.

Yoked Prisms – A wedge-shaped lens that is thicker on one edge than the other. The prism bases (thicker end) are in the same direction for both eyes (up, down, right, left). Yoked prisms are used to train or compensate for

a binocular dysfunction (eye teaming problem) or a visual field loss.

Z

Zonules – The fibers that hold the crystalline lens suspended in position.

Zoom Lens – A compound lens system usually of three or more elements with continuous mechanical alteration of power rather than discrete steps or units.