



ABO Quick Facts

- 1) Lens Clock = Geneva Lens Measure (Calibrated to an index of 1.53)
- 2) Optical tools and gauges are calibrated to an index of 1.53.
- 3) Lensometer = Focimeter and or Vertometer (Measures the focal length of a lens and translates that into power reading)
- 4) Fused bifocal (Combines two separate indices) One Piece bifocal (One index achieves add power with differing curvatures)
- 5) Mechanical Center = Point around which a lens is cut and edged. (The center of the block)
- 6) Geometric Center = The single point at the intersection of the diagonals in the boxed shape.
- 7) Optical Center = Single point on a spectacle lens through which a ray of light may pass without being deviated.
- 8) Given the decentration and diameter of a round shape the smallest cut out blank diameter = $2 \times$ decentration plus lens diameter)
- 9) Flint glass is leaded, heavy, yellowish in color, and brittle.
- 10) A Polariscope (Colmascope) is used to check for strain in an edged lens or to verify stress pattern in air tempered lenses.
- 11) Circle of Least Confusion or Spherical Equivalent = One Half of the Cylinder Power plus the Sphere Power.
- 12) Chemical Tempering uses "Ion Exchange" to strengthen lenses by creating a hard outer surface with an inner compression layer.
- 13) The element in photochromic glass that creates the changeability is "Silver Halide".
- 14) A Crimping plier is used to "crib" or remove excess glass from a lens blank.
- 15) A Chappel plier is a cutting plier.
- 16) The front surface of a crown glass lens reflects 4.28% of the incoming light.
- 17) Lens calipers are used to measure thickness.
- 18) DBL refers to the closest distance between two lenses.
- 19) The velocity of light is the least in the Highest Density Material.\
- 20) Specific Gravity refers to lens material weight by comparing equal volumes of the material and water.
- 21) Chromatic Aberration = The breaking up of white light into its component parts.
- 22) Axial Ray is a name for the ray that passes through a lens without being refracted.
- 23) A glass rod immersed in a medium of the same index of refraction will be INVISIBLE.
- 24) For a ballpark "Best Base Curve" add +4.00 to plus powers and + 8.00 to minus powers.
- 25) Retinoscope - Used to measure refractive power in the eye.
- 26) Tonometer - measures intraocular pressure.
- 27) Ophthalmoscope - Used to view inside of the eye.
- 28) Cycloplegics - Inhibit accommodation.
- 29) Scotoma - Blind spot, An area of retinal vision loss.
- 30) Fusion of two ocular images takes place in the brain.
- 31) Rods - Motion and night vision / Cones - Color, Used for most acute vision.
- 32) Snellen Chart - Used to test distance visual acuity.
- 33) Jaeger Chart - Used to test near visual acuity (J4 or J 2).
- 34) Mydriatic- Dilates pupil.
- 35) The 20 /200 line on the Snellen Chart is 8.87 centimeters tall.
- 36) Kerataconus is a cone shaped deformity of the cornea.
- 37) Limbus - junction between the cornea and the sclera .
- 38) Canthus - The corner of the eye where the lids meet.
- 39) Nystagmus - A fluctuation of the eye often associated with light sensitivity—Photophobia.

- 40) Glaucoma - Eye disease characterized by a build up of inter ocular pressure.
- 41) Aphakic patients have had their crystalline lens removed. Pseudo aphakes have an implant to replace the crystalline lens.
- 42) The average size of the normal pupil in normal lighting is 3 to 5 mm.
- 43) Ptosis = A drooping lid. Corrected by using a Ptosis Crutch.
- 44) 6 extrinsic muscles account for the movement of the eye.
- 45) Aphakes can benefit greatly by using a progressive variable focus lens.
- 46) Chiasm - The point where the optic nerves from each eye are combined.
- 47) Antimetropia - Condition characterized by Rx's with opposite signs eye to eye. (-in one + in the other)
- 48) Anisometropia - Vertical prismatic imbalance characterized by unequal power and prismatic effect at the reading level.
- 49) Anisiekonia - Dissimilar image size from eye to eye due to uneven magnification.
- 50) The eye is most sensitive in the Yellow / Green area of the spectrum.
- 51) Trifocals are prescribed for Advanced presbyopes.
- 52) Tropia - A definite deviation of the eye.
- 53) Phoria - A tendency for the eye to deviate.
- 54) Eso = IN, Exo = OUT, Hyper = UP, Hypo = Down.
- 55) Photochromic lenses are temperature dependent. Hotter = Less Reaction Cooler = More Reaction.
- 56) Half Round plier is made for American style nose pad arm adjustment / Box plier is used for European style nose pad arm.
- 57) Bicentric grinding is a term that is synonymous with the grinding of a Slab - Off.
- 58) A standard bifocal , after it is fabricated has 3 optical centers, but only 2 can be found in the lensometer.
- 59) Absorptive (colored glass lenses) are formed by adding metal oxides to the glass.
- 60) A green glass lens is the best absorber of Infrared.
- 61) Dropball Test --- 5/8ths inch steel ball for dress safety-- - ONE inch steel ball for industrial safety.
- 62) The total weight of the dropball testing apparatus should be no less than 27 pounds.
- 63) Ben Franklin invented the first bifocal lens.
- 64) The back surface of a progressive is spherical but the front surface is aspheric.
- 65) Base in prism is the easiest to tolerate at the near point.
- 66) Excessive Base Down Prism / Makes floor or horizontal expanses seem concave as the wearer feels like he is standing in bowl / vertical objects may seem taller the wearer may feel like he is walking uphill.
- 67) Excessive Base Up Prism / Causes the floor or other horizontal expanses to seem convex as the wearer feels like he is standing on a hill / vertical objects may seem shorter / the wearer may feel like he is walking downhill.
- 68) Excessive Base In or Base Out Prism / May cause the wearer to see horizontal objects as high at one end and low on the other / The too high side will always be towards the apex.
- 69) The use of dissimilar segments (Example Exec /Ultex) could be used to neutralize vertical imbalance at near.
- 70) The imaginary optical plane lying in the X and Y axis is called Listings Plane
- 71) The loss of vision without any apparent defect to the eye is called Amblyopia.
- 72) Ferrous Oxide gives a lens green color and UV as well as Infrared absorption.
- 73) Dispersion is categorized by Abbe Number or as it is also known by Constringency Value or Nu Value.
- 74) The 5/8th inch standard dropball weighs .56 ounces.
- 75) Bifocal add power is = to the difference between the back vertex measurement of the distance and near lensometer readings.
- 76) A corrected curve "Best Form" lens design delivers the least off-axis viewing blur.

- 77) Impact Resistant does not mean unbreakable.
- 78) The parameters of the visible spectrum are approximately from 400 nm to 750 nm.
- 79) The eye as an optical system generates approximately 60 diopters of refractive power 40 of which
are from the cornea.
- 80) Plus moved farther from the eye = Stronger / moved closer = Weaker. Minus lenses are just the
opposite.
- 81) Temple length. 5 1/4 in = 135mm / 5 1/2 in = 140 mm / 5 3/4 in = 145 mm / 6 in. = 150 mm
- 82) When in doubt Transpose and look again.
- 83) When fitting a child with a segmented bifocal it is common to split the pupil.
- 84) Given 4 materials find the thinnest ---- Answer is the one with the highest index.
- 85) The best lens for water activities = Polarized.
- 86) Medicare covers Cataract Surgery.
- 87) Optyl frames require a lens to be edged 1/2 mm over the marked eyesize.
- 88) Optyl will stretch somewhat but it will not shrink.
- 89) The safest lens in all circumstances is Polycarbonate.
- 90) Questions involving prismatic effect due to wide or narrow pd s first require location of the
power
at 180.
- 91) Questions involving prismatic imbalance at the reading level first require location of the power
at
90.
- 92) Read questions carefully - Does the answer require TOTAL prismatic effect which will involve
the
combined prism in both eyes or does the answer require an answer for one eye (In right In
left or in Each eye).
- 93) Always be ready to identify the base direction In /Out /Up /Down.
- 94) Be sure of Mixed Astigmatism --- Transpose and if the signs of sphere and cylinder remain
opposite it is truly mixed.
- 95) Snell's Law deals with refraction and reflection.
- 96) An Un-AR Coated glass or plastic lens will reflect 8% of the light.---- Transmits 92%
- 97) The focal length of a One Diopter lens is One Meter.
- 98) A one diopter prism will deviate a ray of light one centimeter at a distance of one meter.
- 99) The Radius of Curvature of a one diopter lens is 530 mm.
- 100) Focal length in meters = 1 divided by dioptric power.
- 101) Dioptric power = 1 divided by focal length in meters.
- 102) 100 cm = 1 Meter / 1000 mm = 1 Meter / 3937 inches = 1 Meter.
- 103) Memorize indices of all common materials.
- 104) ANSI STANDARDS /especially for Prism Tolerance:
- 2/3 of a diopter = Horizontal
 - 1/3 of a diopter = Vertical.
 - Base Curve + or - .75 diopters
 - Power + or - .13 up to + or - 6.50 diopter
 - Above 6.50 2%
 - Axis .12 to .37 + or - 7 degrees
 - .50 to .75 + or - 5 degrees
 - .87 to 1.50 + or - 3 degrees
 - 1.62 and above + or - 2 degrees.

105) If you know nothing else -- Know the PRENTICE RULE Prismatic Effect

$$\text{PRISMATIC EFFECT} = \text{Distance Moved} \times \text{Dioptic Power}$$

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106) Know characteristics of a Plus and Minus lens / There are at least 5 for each - Know one the other will be opposite.

107) Decentration = A box + DBL minus patients pd (Total) or Divide A box + DBL by two before subtracting the monocular values to get decentration in each eye.

108) 5 Types of astigmatism / Simple Myopic / Simple Hyperopic / Compound Myopic / Compound Hyperopic / Mixed.

109) A patient records for impact resistance must be kept for 3 years.

110) The amount of prism that is ground into a SLAB OFF can be checked with a lens clock by taking

the difference between the 90 degree reading with 3 pins above the Slab line and the clock

reading at 90 with the center pin on the line.

111) Meniscus Lens - A crescent shaped lens, one side concave and one side convex, one side a 6

base curve.

112) When viewing a lens that is divided into 4 quadrants, the correct way to identify each quadrant is

as follows :

