



Figure 2-5. Example of a base curve chart.

the angle of refraction (the angle created between the refracted light ray and normal light rays), and the index of refraction determine the ultimate refractive ability of the lens. Snell's Law of Refraction is the basis of all ophthalmic lens and ophthalmic instrument design.<sup>1</sup>

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## Understanding Base Curves

Every ophthalmic lens has a beginning or base curve. The base curve of a lens is easily determined by using a lens clock or lens measure (See Chapter 3). Base curves have a numeric value and are in either plus or minus form. For example, the base curve of a lens could be a low number (curves which are flat in nature), such as plano, 0.50, 2.00, 4.00, or 6.00. The base curve could also be a higher number, indicating a steeper curve, such as 8.00, 10.00, 12.00, or 14.00.

Base curves can be either even or odd numbers. Generally, lenses with odd base curves tend to be aspherically designed lenses. Lenses of even base curves are usually made of common materials and designs, such as CR-39 or regular glass. (These are all discussed later.)

All curves of an ophthalmic lens, as well as the resultant lens power, are dependent on the base or front curve. The base curve of a spherical lens is ground on the front curve of the lens. Likewise, the base curve of spherocylindrical lenses (lenses that correct astigmatism) ground in minus cylinder (where the cylinder is ground on the backside of the lens) is also on the front surface of the lens. The stronger curve on the backside of a spherocylindrical lens is called the cross curve, and the weaker curve is the toric base curve.

Manufacturers produce base curve selection charts to assist optical professionals in choosing the appropriate base curve for a given prescription (Figure 2-5). The suggested base curves will minimize unwanted peripheral problems and produce the best cosmetic appearance for the prescription, while also providing optimum vision. Base curves for a specific lens power may vary from vendor to vendor depending on each manufacturer's fabrication process.

Often times, a practitioner may state to "match the old base curve" on a prescription. It is important to use caution when opting for the old base curve, especially if the patient has experienced a significant change between the old and new prescription. However, if a patient wears a high-powered lens and has not experienced a change in the prescription, it is wise to