Correction of ametropia using the far point concept

1. Locate the far point of the eye.

2. Choose a lens whose secondary focal point coincides with the far point.

Vertex distance conversion

1. Locate the focal point of the present lens; this is the far point of the eye.

2. Determine the distance of the new lens from the far point; this is the focal length of the new lens required.

3. Take the reciprocal of the focal length of the new lens to determine the power of the new lens.

See:
p63, prob 15
p83, prob 33

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Lens effectivity

1. Plus lenses

Moving plus lenses forward increases effective plus power.

(Aphakic patients often slide their glasses down their noses to see more clearly at near.)

To maintain proper distance correction, a plus lens will have to be decreased in power (giving it a longer focal length) if it is moved forward.

Moving plus lenses toward the eye decreases effective plus power. Therefore the lens must be increased in power (giving it a shorter focal length) to maintain the same correction for distance.

Note that it requires about +18.00 D of IOL power to give the same correction as +10.00 D of spectacle lens power. As an approximation, we use 1.25 to 1.50 D for IOL power per 1.00 D of spectacle lens power.

For example, if we wish to achieve -1.00 D of myopia in an eye calculated to need a +18.00 D IOL for emmetropia, we should implant a +19.50 D IOL.
Contact lenses — calculation of power

**Overrefract** over a trial lens and add the finding to the power of the trial lens.

If trial lenses are not available, **calculate** power by:

1. **Soft contact lenses:**
   a. Convert spherical equivalent of the refraction to zero vertex distance for the power of a spherical soft contact lens.

2. **Rigid contact lenses:**
   a. Obtain **K readings** and **refraction**
   b. Choose **base curve** slightly steeper than low K (usually +0.50 D steeper, or 1/3 of the astigmatism steeper, whichever is greater). Tears form a +0.50 D (or greater) "tear lens", preventing apical touch.
   c. Convert refraction to:
      1. minus cylinder form (the minus cylinder will be formed by the tears and may be disregarded from this time on)
      2. zero vertex distance
   d. Subtract the +0.50 D (or greater) spherical tear lens from the sphere value of the refraction to obtain the final sphere value for the contact lens.

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**Example:**

<table>
<thead>
<tr>
<th>K readings</th>
<th>Refraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.25 / 45.87</td>
<td>+ 11.50 + 1.00 x 35</td>
</tr>
<tr>
<td></td>
<td>(at 13 mm vertex distance)</td>
</tr>
</tbody>
</table>

choose base curve **44.75**, + 0.50 D steeper than low K

convert refraction to minus cylinder form:

+ 12.50 - 1.00 x 125

convert sphere of refraction to zero vertex distance:

+ 15.00 - ...........

subtract value of spherical tear lens from calculated sphere:

+ 15.00 - (+0.50) = + 14.50 D Sphere

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See:

p67, prob 20
p95, prob 43

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