Troubleshooting the Uncommon Prescription

Diane F. Drake, LDO, ABOM, NCLEM, FNAO

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Introduction

- Anatomy
- Different types of refractive errors.
- Some apparent common prescriptions on patients whose lifestyles are not common, therefore requiring uncommon solutions.
- The importance of understanding common and uncommon prescriptions.

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Introduction

- Certain optical prescriptions that will create difficulties in magnification and minification for the patient
- The role that the ophthalmic dispenser has in advising the patient of options that will best meet the visual needs of their patients.
- Case Histories
- Optical solutions for patients
- Communication

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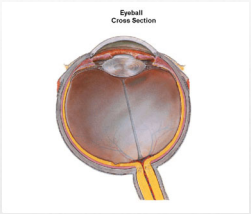
Anatomy



- **Cornea**
- **Aqueous humor**
- **Crystalline lens**
- **Vitreous humor**
- **Retina**
- **Tear film**

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Anatomy

- **Four Refractive Mediums of the Eye**

- The cornea
- The aqueous humor
- The crystalline lens
- The vitreous humor

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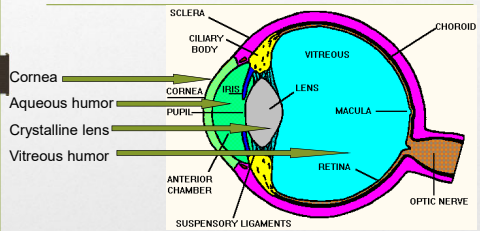
Four Refractive Mediums of the Eye



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Index of Refraction

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Dioptric Power

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Cornea

- Five distinct layers
  - Epithelium
  - Bowman's layer
  - Stroma
  - Descemets membrane
  - Endothelium

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Lacrimal Apparatus

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Tear Layer

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Emmetropia

- **Normal Eye**
- **Standard Emmetropia**
- **Nonstandard Emmetropia**

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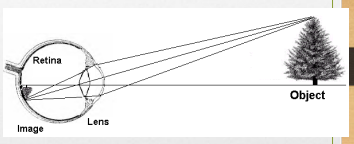
Normal Eye

- Emmetropia
  - Standard
  - Non-Standard
  - No refractive error



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Refractive Errors
Ammetropias

- **Myopia**
- **Hyperopia**
- **Astigmatism**
  - **Types**
  - **Location**

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Keratometry

- Spherical
- Toricity
  - Corneal
  - Refractive
  - Location
  - Left over

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Keratometry

- With the Rule Astigmatism
- Against the Rule Astigmatism
- Oblique Astigmatism

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Astigmatism

- **Refractive Astigmatism**
- **Corneal Astigmatism**

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Spherical Equivalents

- Calculations

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Anisometropia

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Antimetropia

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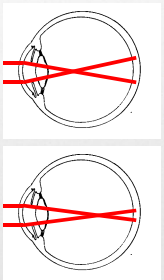
Aniseikonia



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Iseikonic lenses

- A lens or pair of lenses used to correct aniseikonia
- Variables:

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Vertex Distance

- When to compensate?

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Power of Tear Film

- SAM
  - Steeper add minus
- FAP
  - Flatter add plus

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Soft Contact Lenses

- When will they work
- When won't they work
- The emotions of Contact Lens Patients

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Rigid Contact Lenses

- When to fit
- When not to fit
- The emotions of Contact Lens Patients

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Spectacles

- Advantages
- Disadvantages
- Combination of spectacles and contact lenses

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Case Histories

- Examples
- Contact Lenses
- Spectacles

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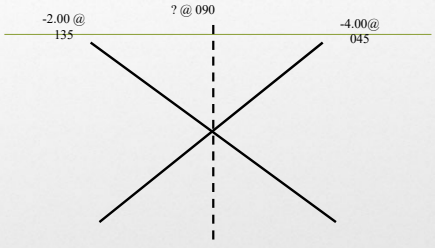
Prentice's Rule



Rx -2.00 -2.00 X 135

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Simple formula

Degrees from Axis	Memorize	Percentage of cylinder Power in this meridian
0	0	0
5	1	1
10	2	3
15	4	7
20	5	12
25	6	18
30	7	25
35	8	33
40	8	41
45	9	50
50	9	59
55	8	67
60	8	75
65	7	82
70	6	88
75	5	93
80	4	97
85	2	99
90	1	100

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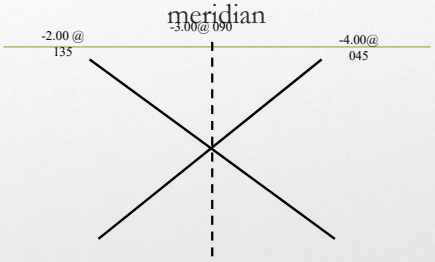
Finding the power in of a lens in any meridian



Rx -2.00 -2.00 X 135

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Unequal Refractive Errors

- Why do you need to know
- Unequal powers

- Isometropia
- Anisometropia
- Antimetropia

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Vertical Imbalance At The Reading Level

- Let's go back and discuss the vertical imbalance at the reading level.
- Eye moves down through lens
  - Plus lens creates base up prism as the eye moves down
  - Minus lens creates down prism as the eye moves down

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Vertical Imbalance At The Reading Level

- Using Prentice's Rule, let's determine if there is imbalance at the reading level in the following Rx. Reading level is 10mm.

  -0.25 +3.00 X 180
  -1.00 +1.00 X 090
  ADD OU +1.50

- First you need to determine the total power in the vertical meridian of both lenses.

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Vertical Imbalance At The Reading Level

OD -0.25 +3.00 X 180

ADD +1.50

For the right lens, we want to find the power in the 90th degree meridian. Based on Prentice's Rule, the axis is 90 degrees away from that meridian, so we will use 100% of the cylinder power and add it to the sphere power. That makes our distant power +2.75. Then we must add the ADD power which gives us a total power at the reading level of +4.25.

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Vertical Imbalance At The Reading Level

OS -1.00 +1.00 X 090

ADD +1.50

For the left lens, we want to find the power in the 90th degree meridian as well. Based on Prentice's Rule, the axis is 0 degrees away from that meridian, so we will use 0% of the cylinder power. That makes our distant power -1.00. Then we must add the ADD power which gives us a total power at the reading level of +0.50.

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Vertical Imbalance At The Reading Level

OD -0.25 +3.00 X 180

OS -1.00 +1.00 X 090

ADD OU +1.50

OD total power at the reading level is +4.25

OS total power at the reading level is + 0.50

Reading level is 10 mm therefore,…

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Vertical Imbalance At The Reading Level

- OD = +4.25
  - P Δ = 10 X +4.25 must convert to CM
  - P Δ = 1.0 X +4.25
  - P Δ = 4.25 Δ
- OS = +0.50
  - P Δ = 10 X +0.50 must convert to CM
  - P Δ = 1.0 X +0.50
  - P Δ = 0.5 Δ
- Therefore, there is 3.75 diopters of prism imbalance at the reading level of 10 mm.

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Visual Concerns or Cosmetic Concerns?

OD -2.00 – 2.00 X 180

OS - 2.00 – 2.00 X 090

Add OU + 2.50

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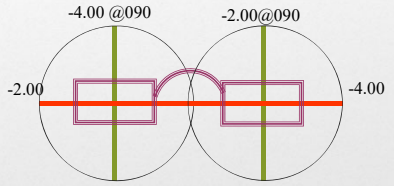
Cosmetic Concerns

-2.00 – 2.00 X 180

-2.00 – 2.00 X 090

Add OU +2.50



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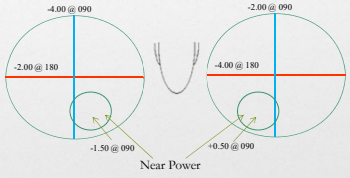
Visual Concerns

OD -2.00 -2.00 X 180

OS -2.00 -2.00 X 090

Add OU + 2.50



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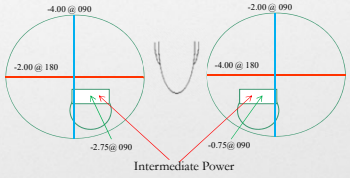
Ophthalmic prescription

- OD -2.00 -2.00 X 180
- OS -2.00 -2.00 X 090
- Add OV + 2.50



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Case History

You make the call

Create a patient

Group comes up with patient

patient history

chief complaint

solution or solutions

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Lifestyles

- Visual Tasks
- Lifestyle Tasks
- Emotions

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Conclusion

- You make the call
- Remember there is not always a clear cut “one” solution for every situation
- Thank you

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