

# Duochrome test

H C H Z C

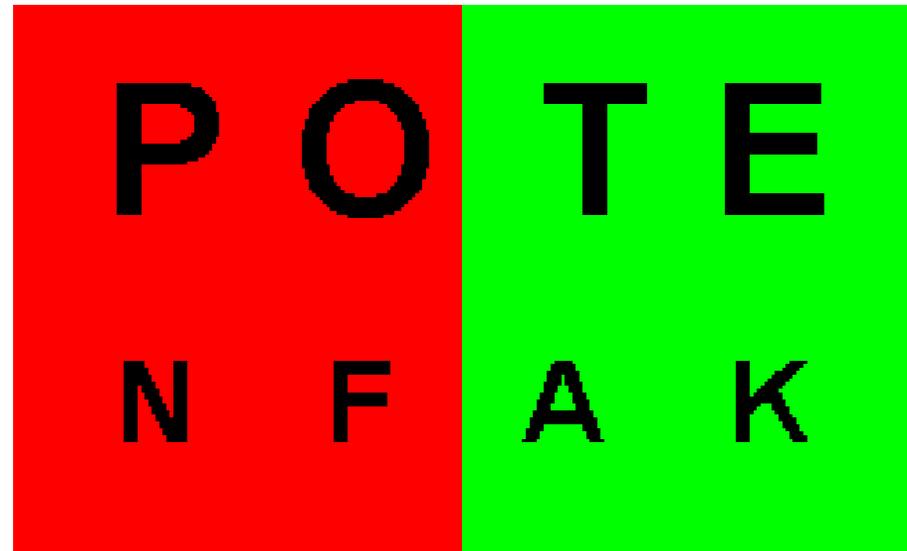
H C H Z C



# Introduction

Also known as Bichrome method. Is commonly used to determine best vision sphere during monocular refraction.

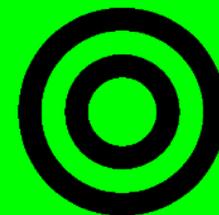
Duochrome test is performed using a distance visual acuity chart with black letters, and the chart is split equally into two identical halves. Letters on the right half of the chart have a green background and the identical left half of the chart have a red background, or vice versa.



H C H Z C



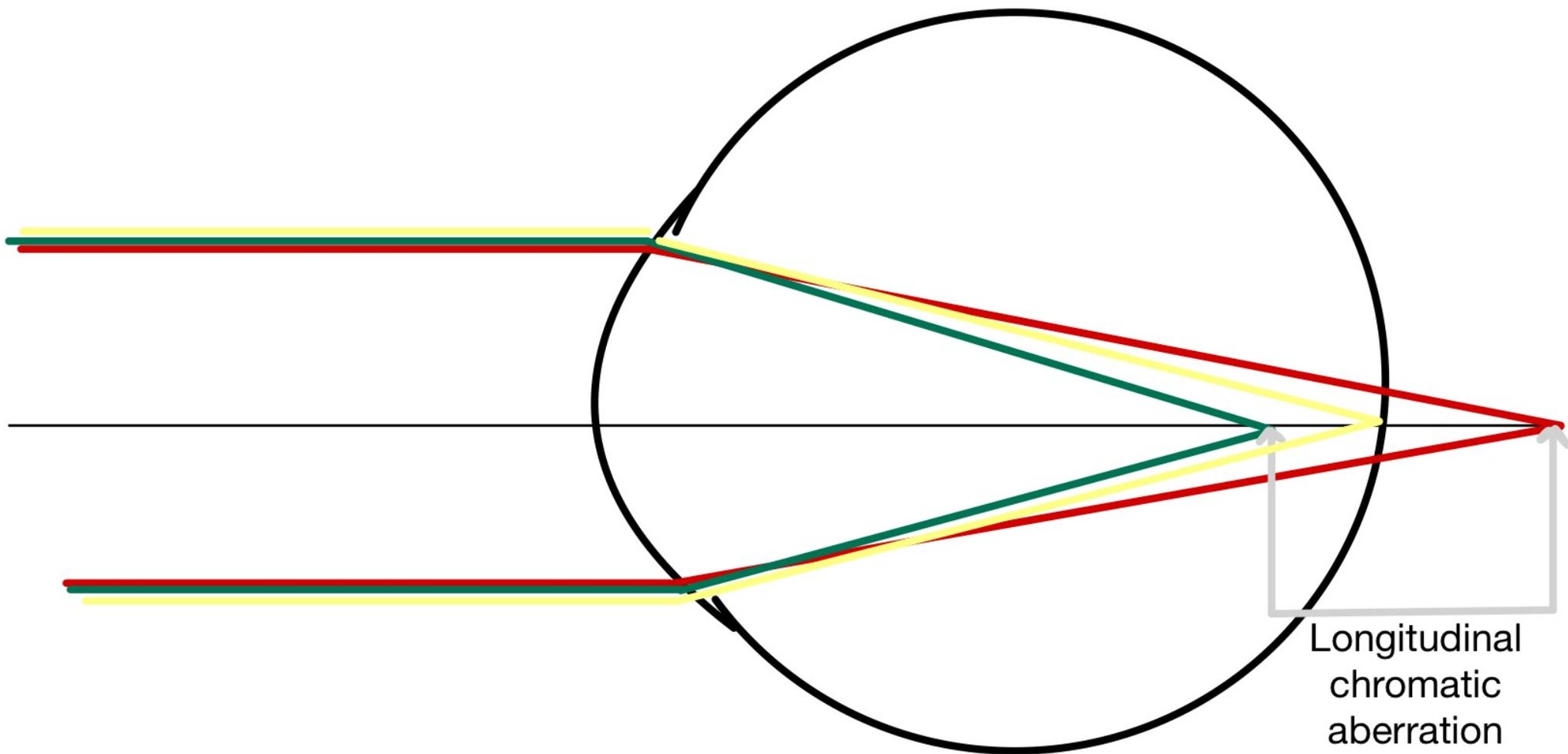
H C H Z C



# Principle

Duochrome test is based on **longitudinal chromatic aberration**. Short wavelength ( Green 535nm) tends to bend more compared to longer wavelength (Red 620nm).

In emmetropic eye or corrected eye, Green light focus 0.20 D in front of the retina and red light focus 0.24 D behind the retina.



# When to perform

1. Duochrome test can be performed before JCC to ensure that circle of least confusion is on the retina.
2. And after JCC before you finalize final refractive correction.

# Procedure

- Monocular
- Semi dark room: Helps dilating pupil and slightly increase the chromatic aberration.
- Ask the subject: whether the letters/rings/dots are equally visible or prominent on the both backgrounds or more visible or prominent against one of the background.

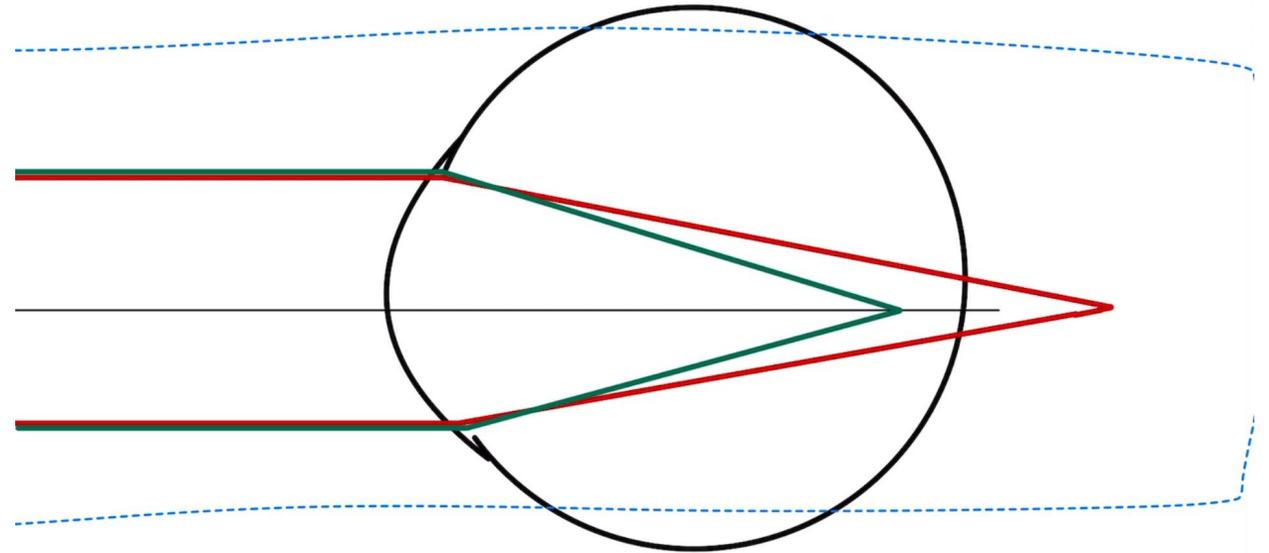


If patient says: Letters on the green background are more clearer or sharper,  
when compare to red background.

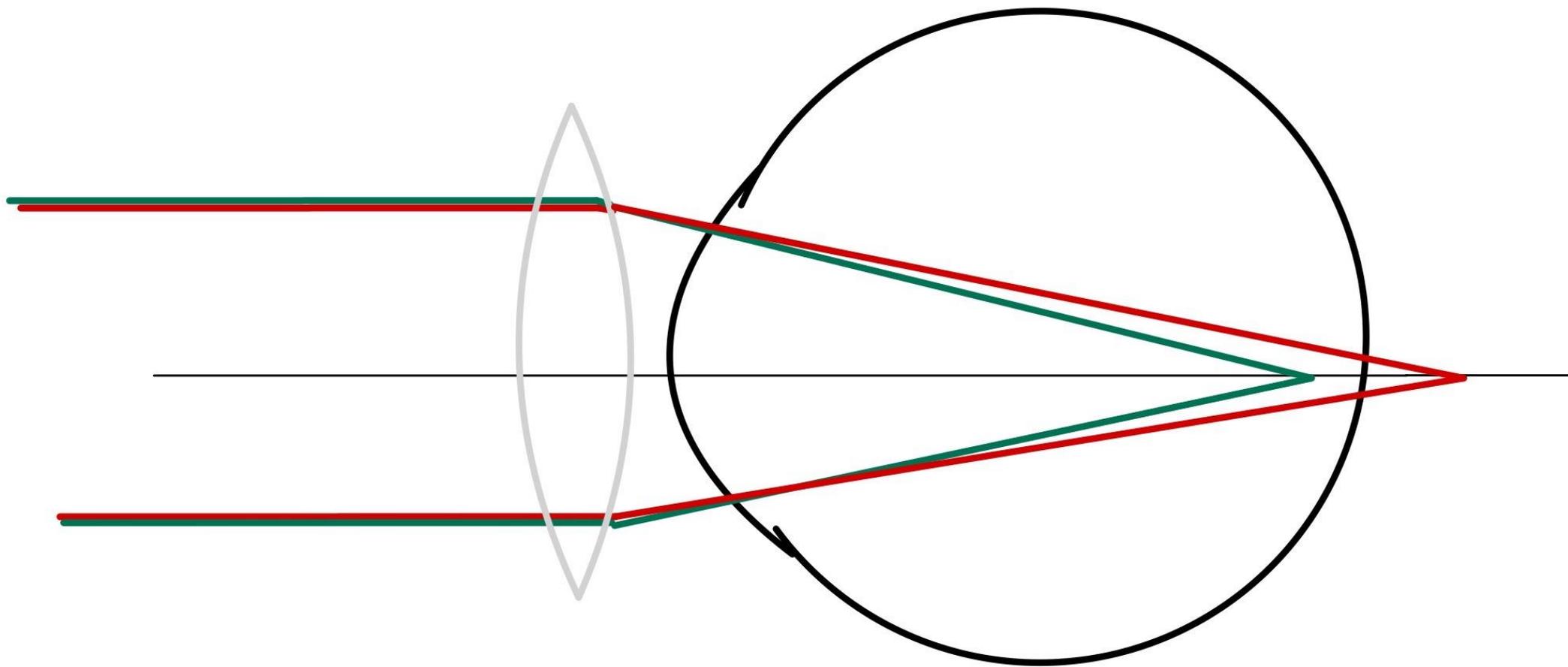
It means:

Patient overcorrected myope

Or under corrected hyperope



**Add plus +0.25DS until patient reports both same.**

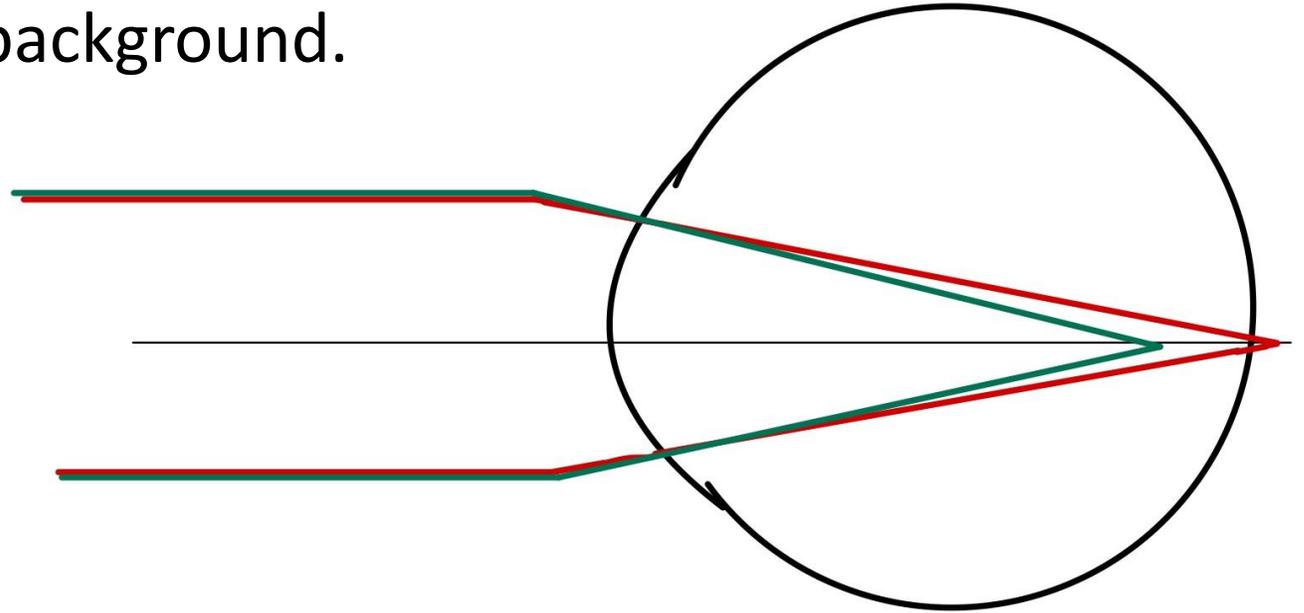


If patient says: Letters on the red background are more clearer or sharper, when compare to green background.

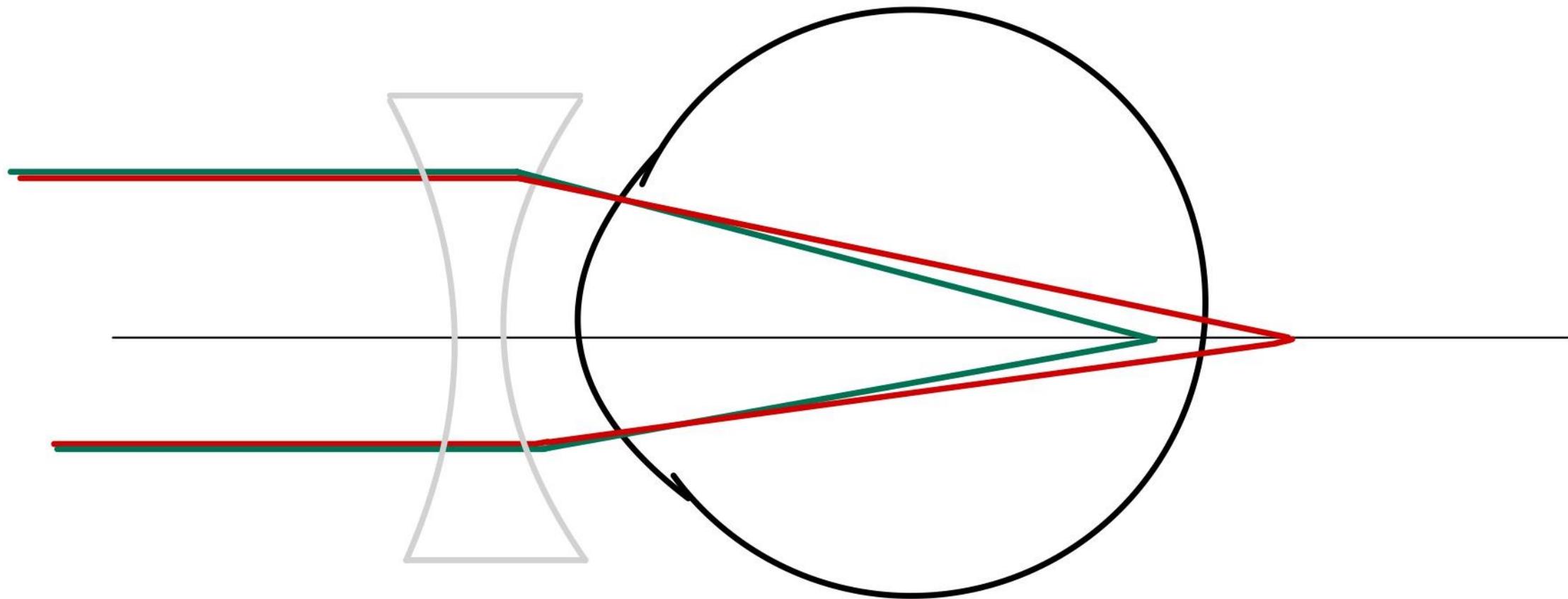
It means:

Patient overcorrected hyperope

Or under corrected myope



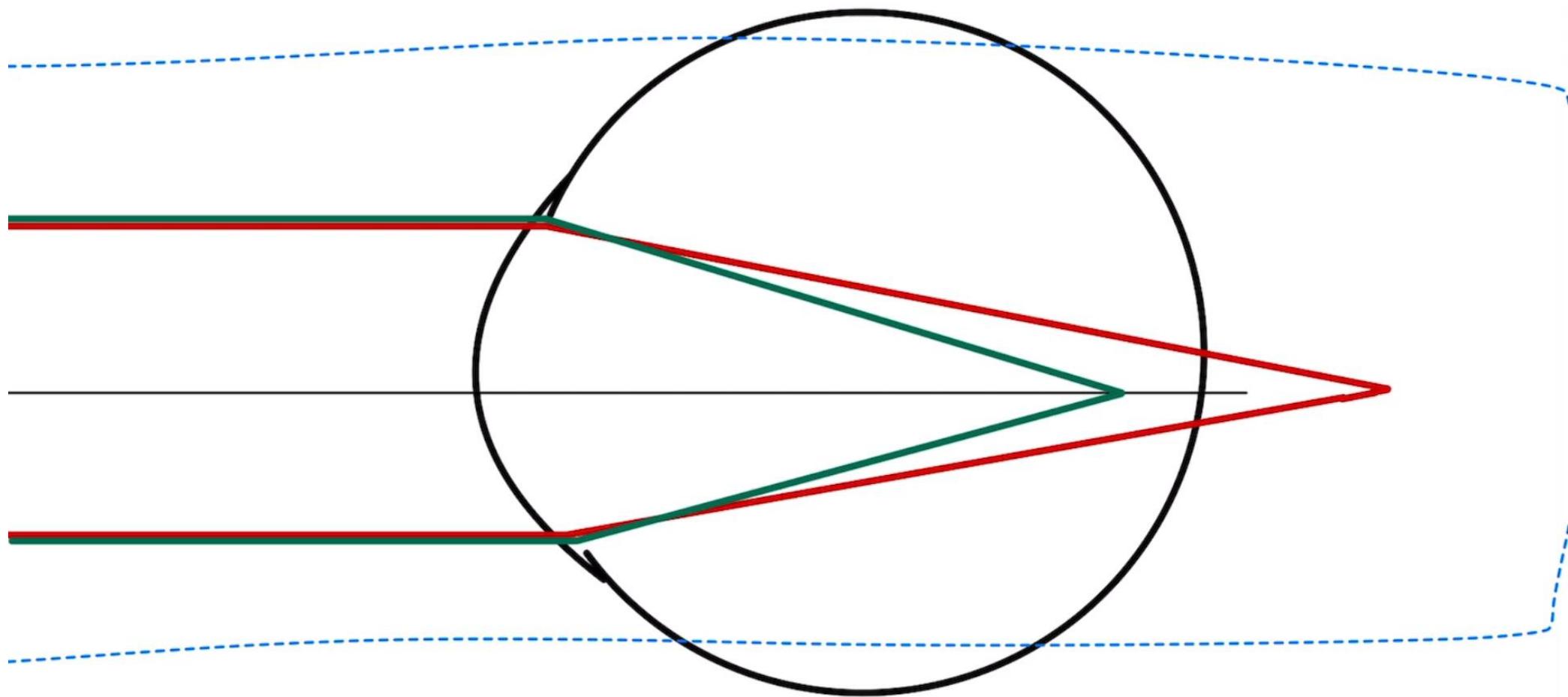
**Add -0.25DS until patient reports both same.**

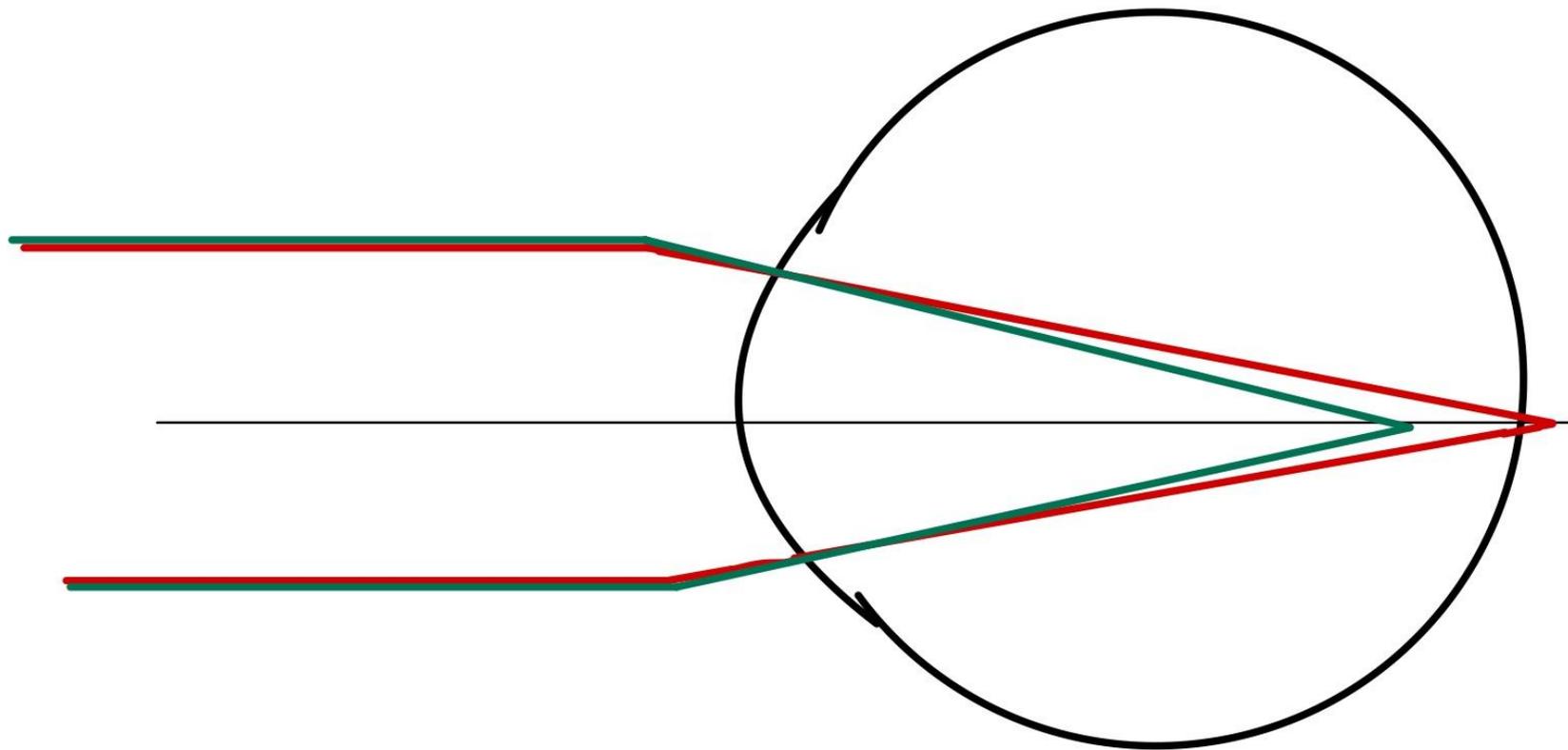


**Note:** If more than  $\pm 0.50$  DS is required to balance, this usually indicated the duochrome test is not reliable for this patient and should be ignored.

**For final power:**

If clarity or sharpness of letters or rings changes from green to red with  $+0.25$  or red to green with  $-0.25$ . Keep young patient on red side.





Thankyou....