Video Lecture #1 – Chapter 15.1 - Introduction to the Refraction of Light and the Index of Refraction

Thank You, Stephanie Hong, for these notes.

Video Lecture #2 – Chapter 15.1 - Introduction to Dispersion, Snell’s Law with an Example Problem
Video Lecture #3 – Chapter 15.1 - Understanding how a Mirage Works - Refraction of Light (no lecture notes)

Video Lecture #4 – Chapter 15.2 - Introduction to Converging Lenses (or Bi-Convex), Fresnel Lenses and Image Characteristics

Video Lecture #5 – Chapter 15.2 - Example - Learning how to Draw a Ray Diagram of a Converging Lens (or Bi-Convex) includes the Math
Video Lecture #6 – Chapter 15.2 - Example - Learning how to Draw a Ray Diagram of a Diverging Lens (or Bi-Concave)
includes the Math

Video Lecture #7 – Chapter 15.2 - A Basic Explanation of the Optics of the Human Eye (no lecture notes)
Total Internal Reflection

θ_c = critical angle

⑴ the minimum incident angle at which all incident light will be totally internally reflected.

- if θ_i ≥ θ_c ⇒ total internal reflection

\[ n_i \sin \theta_i = n_r \sin \theta_r \]

- θ_i = θ_c when θ_r = 90°

\[ n_i \sin \theta_c = n_r \sin (90°) = 1 \]

- \[ \sin \theta_c = \frac{n_r}{n_i} \]

⑵ 1 ≥ sin θ_c = \frac{n_r}{n_i}

⑶ \[ n_i \geq n_r \]

Video Lecture #9 – Chapter 15.3 - Example - Total Internal Reflection, Critical Angle and Drawing the Ray Diagram

Video Lecture #10 – Chapter 15.3 - Adding to the Table of Friends – Lenses (no lecture notes)