

Vocabulary: Refraction

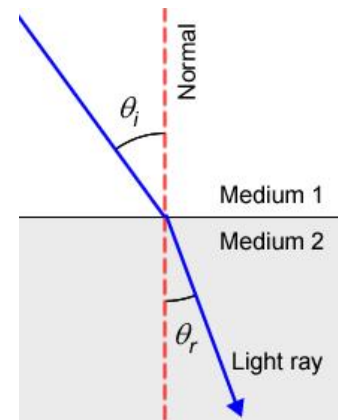


Vocabulary

- Angle of incidence – the angle between a light ray moving through a medium and the normal.
 - The normal is an imaginary line that runs perpendicular to the border between two media.
 - The symbol for angle of incidence is θ_i .
- Angle of refraction – the angle between the light ray moving through a second medium and the normal.
 - The symbol for angle of incidence is θ_r .
- Frequency – the number of waves produced in a given amount of time.
- Index of refraction – a ratio of the speed of light in a vacuum to its speed in a given medium.
 - The higher the index of refraction of a medium, the slower light will travel through that medium.
 - The symbol for index of refraction is n .
 - Air has a refractive index 1.0003, glass has a refractive index of 1.52, and diamond has a refractive index of 2.419.
- Medium – a substance through which a wave can travel.
 - The plural of *medium* is *media*.
- Refraction – the bending of a wave as it passes from one medium to another.
 - During refraction, the speed and wavelength of a wave changes, but not its frequency.
- Snell's law – a law stating that the product of the index of refraction of the first medium and the sine of the angle of incidence is equal to the product of the index of refraction of the second medium and the sine of the angle of refraction:

$$n_1 \cdot \sin(\theta_i) = n_2 \cdot \sin(\theta_r)$$

- Total internal reflection – a phenomenon in which light is reflected from the boundary between two substances rather than refracting through the boundary.
 - Total internal reflection occurs when the refractive index of the first medium is greater than the refractive index of the second medium.
 - The minimum angle of incidence that results in total internal reflection is the critical angle.



- Wave front – the front edge of an advancing wave.
- Wavelength – the distance between consecutive crests or troughs of a wave.
 - Different forms of electromagnetic radiation are distinguished by their wavelength.
 - Visible light has wavelengths between 380 and 730 nanometers (nm).
- Wave speed – the distance a wave travels in a given amount of time.
 - Wave speed (v) is equal to the product of the wave's frequency (f) and its wavelength (λ): $v = \lambda \times f$.

