

12.4: End of Chapter Key Terms

Definition: Reflection and Refraction Waves

- **Wave:** A disturbance that transfers energy through matter or space, characterized by its wavelength, frequency, and amplitude.
- **Reflection:** The bouncing back of a wave when it hits a surface that it cannot pass through.
- **Law of Reflection:** States that the angle of incidence (the angle at which a wave hits a surface) is equal to the angle of reflection (the angle at which the wave bounces off).
- **Angle of Incidence:** The angle between the incoming wave and the normal (a line perpendicular to the surface at the point of incidence).
- **Angle of Reflection:** The angle between the reflected wave and the normal.
- **Refraction:** The bending of a wave as it passes from one medium to another, caused by a change in its speed.
- **Index of Refraction:** A measure of how much a wave slows down in a given medium, defined as the ratio of the speed of light in a vacuum to its speed in the medium.
- **Snell's Law:** Describes the relationship between the angles of incidence and refraction, stating that the ratio of the sines of these angles is equal to the ratio of the indices of refraction of the two media.
- **Normal Line:** An imaginary line perpendicular to the surface where a wave is incident.
- **Critical Angle:** The angle of incidence above which total internal reflection occurs when a wave travels from a medium with a higher index of refraction to one with a lower index of refraction.
- **Total Internal Reflection:** The complete reflection of a wave back into its original medium when the angle of incidence exceeds the critical angle.
- **Dispersion:** The separation of a wave into its component wavelengths (colors), typically seen with light passing through a prism.
- **Wavefront:** A surface over which a wave has a constant phase, often used to visualize how waves propagate.
- **Plane Mirror:** A flat mirror that reflects light to form an upright, virtual image the same size as the object.
- **Concave Mirror:** A mirror with a surface that curves inward, capable of converging light rays to a focal point.
- **Convex Mirror:** A mirror with a surface that curves outward, causing light rays to diverge and form a smaller, virtual image.
- **Lens:** A transparent object that refracts light waves to converge or diverge them to form an image.
- **Converging Lens:** A lens that brings parallel light rays to a focus (also known as a convex lens).
- **Diverging Lens:** A lens that spreads out parallel light rays (also known as a concave lens).
- **Focal Point:** The point where converging light rays meet or appear to meet after passing through a lens or reflecting off a mirror.
- **Focal Length:** The distance between the lens or mirror and its focal point.
- **Real Image:** An image formed by converging light rays that can be projected onto a screen.
- **Virtual Image:** An image formed by diverging light rays that cannot be projected onto a screen and can only be seen by looking into the optical device (e.g., a mirror or lens).

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